FLIGHT

MAGAZINE

JANUARY 1961

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ALL-METAL MOONEY MARK 21

(See page 20)

RIVIERA BY LANE

A brilliant and beautiful Italian design... executed in the fine European tradition with absolute attention to each detail. Fitted with reliable American instruments and radios... Continental engines... for finest, most consistent performance.

The Riviera is a luxurious, roomy 4-place, all-metal aircraft with a cruising speed of over 165 m.p.h. and a top speed of 182 m.p.h. It is the first amphibious aircraft ever offered which gives the top performance characteristics of a land based plane.

Within the next few months the Lane Riviera will be in various parts of the country. If you would like to see it... or better yet, fly it, contact: **Gerald L. Spear, Executive Vice-President, Lane Aircraft, 715 Exchange Bank Building, Dallas, Texas.**

informational report #1 now available

LANE AIRCRAFT COMPANY · DALLAS, TEXAS

JAN 23 1961 B 879443

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In fact you still have more than 175 pounds weight allowance *left over* for baggage or other equipment. No other over-200-mile-an-hour, 5-place twin in the Aztec's class can make that statement.

Check the Aztec before you buy any twin. See your Aztec dealer or write for '61 Aztec brochure, Dept. F-1.

PIPER AIRCRAFT CORPORATION
Lock Haven, Pennsylvania

MORE PEOPLE HAVE BOUGHT PIPERS THAN ANY OTHER PLANE IN THE WORLD

Lloyd D. Catlin—President of Catlin Aviation Co. A veteran pilot, he has served aviation in Oklahoma City for 18 years.

Red Carpet Service at Oklahoma City

"Catlin's Hangar", Will Rogers Field, Oklahoma City—known for prompt and courteous service to all . . . "from Cubs to Connies"

A view of the new air-conditioned customer lounge. Operations Office Manager is Elizabeth V. Sewell.

He's built a reputation for top service. Line Supervisor, D. L. "Scotty" Scott takes over on a light twin.

At Catlin Aviation they're noted for "pampering" pilots, passengers and planes! Taxi in there the next time you land at Oklahoma City's Will Rogers Field . . . and see for yourself. Open 'round-the-clock, seven days a week, Catlin boasts a brand-new hangar (largest in the area) and a plush, air-conditioned lounge. Line service is prompt and efficient —featuring mobile refueling with Phillips *66* Aviation Gasoline (Grades 80, 91, 100, and 115) and JP-4 jet fuel . . . and an airline-type oil dispenser for larger planes.

One of the oldest aviation sales and service organizations in Oklahoma—Catlin is noted for the high calibre of their maintenance and overhaul. They also offer approved radio service, custom panels and auto-pilot installations.

For "red carpet service" ask ground control for "Catlin's Hangar". It's at the N. E. corner of the field—courtesy transportation to the terminal... tie down or inside storage.

★ ★ ★

New HD Oils... For Longer Engine Life

Never before could an aircraft oil promise so much! With improved additives, new Phillips 66 Aviation HD Oils provide top protection against pre-ignition, plug fouling, ring sticking and valve burning . . . keep engines cleaner for longer life, maximum in-flight reliability, and lower operating costs. Phillips 66 HD Oils meet Continental and Lycoming specifications.

AVIATION DIVISION • PHILLIPS PETROLEUM COMPANY • BARTLESVILLE, OKLAHOMA

PHILLIPS 66

MODEL OF NEW BOEING 727 short-to-medium range jet airliner is shown above. It features three jet engines mounted on the aft end of the fuselage, one of them in the base of the vertical fin. Eastern Air Lines and United Air Lines have ordered 80 of the 3-jet Boeings costing over $350 million. The Boeing 727 will operate from 5,000-ft. runways, carry 70 to 114 passengers at speeds up to 600 mph. over distances of 150 to 1,700 miles. Shown with model are Wellwood E. Beall (right), senior vice president, and George R. Sanborn, director of commercial transport sales, of Boeing.

AIR Report
Significant Trends and News

ORDERS FOR NEW $4,995 PIPER COLT have far exceeded Piper Aircraft's expectations and production for the 2-place, side-by-side tricycle will reach a rate of 5 Colts per day by February 1. . . . Production for the new $9,995 4-place, low-wing, tricycle Piper Cherokee is scheduled to reach 5 airplanes a day by midsummer.

PLANS TO SOLO 1,000 MEMBERS OF THE FLORIDA JUNIOR CHAMBER OF COMMERCE in the new Piper Colt by next June have been undertaken by the organization's state aviation committee, headed by Harvey R. Iris of Hollywood, Florida. Deliveries of new Colts to 13 dealers were scheduled for January 8. The mass drive for flight instruction will be conducted as "Operation Solo."

INTERNATIONAL TELEPHONE AND TELEGRAPH'S ITT FLIGHT SYSTEM for business aircraft has been issued an FAA Technical Service Order (TSO). The ITT flight system is a modification of the FTR lightplane autopilot marketed for several years by Federal Telephone and Radio Company, which is now ITT's Federal Division. Fred A. Twomey, manager of aviation products for the company, said owners of light aircraft who wish to exchange their FTR autopilots for the new ITT flight systems may do so for $895 list price. Normal cost of the new flight systems ranges from $2,000 to $3,000. Exchanges may be arranged with fixed-base operators or by writing directly to Avionics Products, ITT Industrial Products Division, 15191 Bledsoe St., San Fernando, California.

FUEL INJECTION FOR TWIN BEECH ENGINES is available from Conrad International Corp., Box H, Lunken Airport, Cincinnati 26, Ohio, through its STC No. SE1-391 for the Simmonds SU-580 Series fuel-injection unit for all Beech D18S, E18S and C-45 G and H models. Conrad says the Simmonds package includes an automatic oil radiator and Winslow oil filter. A speed density metering system, it uses the engine itself as an air pump, meters fuel at the desired rate for any combination of speed, intake air pressure, temperature and exhaust back pressure while removing all problems of manual leaning. Pilots can determine fuel consumption within 1/10th of a gallon at a glance of

FLIGHT MAGAZINE

JANUARY, 1961 VOL. 50, No. 1

THIS MONTH'S COVER presents a striking view of the new all-metal Mooney Mark 21, successor to the Mark 20-A, which was of composite construction. The 4-place, 180-hp. Mark 21 cruises 180 mph., retaining the same dimensions, weight, power and performance of the Mark 20-A.

—(Mooney Aircraft Photo by Tony Linck.)

Air Report—SIGNIFICANT TRENDS AND NEWS 5

Just Among Ourselves—EDITORIALS: FAREWELL TO QUESADA; A GOOD YEAR COMING UP; FLIGHT SAFETY CLINICS: BUSINESS AIRCRAFT SHOWCASE 17

New All-Metal Mooney Mark 21—BY TOM ASHLEY—MOONEY ELIMINATES WOOD AND TOOLS UP FOR INCREASED SALES WITH NEW MODEL 24

Minnesota's State-Owned Omni System—BY DALE MaCIVER—DETAILS AND COSTS OF OMNI STATIONS LOCATED ON AIRPORTS . 27

King With Many Crowns—BY GEORGE E. HADDAWAY—HOW A YOUNG GENIUS WITH IDEAS HAS MOVED INTO THE AIRCRAFT RADIO MARKET 28

FAA Inspects the JetStar—PICTURES DEPICT ENGINEERING EVALUATION 31

New Cessna 210, Skylane and 182—NUMEROUS REFINEMENTS FOR 1961 MODELS 32

New Bell's Tour Performance—LOW MAINTENANCE AND HIGH SPEED IMPRESSIVE 47

Bigger Loads for Sikorsky—POWERFUL TURBINES KEY TO GIANT WEIGHT LIFTERS 51

Bill Piper—Grand Old Man of Private Flying—INDUSTRY LEADER ACTIVE ON 80TH BIRTHDAY AFTER 30 YEARS OF ACCOMPLISHMENTS 54

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New Business in the Hangar—NATIONWIDE ROUNDUP OF INTERESTING DEVELOPMENTS IN BUSINESS FLYING 66

GEORGE E. HADDAWAY, Editor-Publisher; TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager; LOUISE ROBERTSON, Circulation; E. H. PICKERING, Consultant; P. O. Box 750 (2700 N. Haskell Ave.), Dallas, Texas — Telephone TAylor 3-6191.

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King Certified Dealers are carefully selected. Each has a completely equipped radio shop with personnel highly qualified to install and maintain aircraft-quality electronic equipment. Each can make realistic, economical recommendations on the radio equipment you need. And King dealers *are* always on the spot—near you—ready and qualified to serve you with "Tomorrow's Aircraft Equipment—TODAY!"

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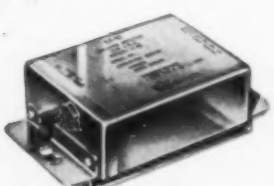
KI-200 CONVERTER/INDICATOR, $645

KX-100 NAV and COMM, $1095



and KING'S newest— KA-10 ISOLATION AMPLIFIER, $79.50

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Windsor Locks—Kemp Communications, Inc.

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Jacksonville—L. D. Bragg Aviation Electronics
Miami—Florida Aircraft Radio & Marine
Peninsular Aircraft Radio, Inc.
Sarasota—Sandy's Radio Co.

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Atlanta—Southern Aero Radio
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Chamblee—DeKalb Aviation Corp.

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East Alton—Walston Aviation Corp.
Northbrook—Mid-State Aviation Corp.
Polo—Radio Ranch
Quincy—Business Aircraft, Inc.
Springfield—Capitol Aviation
Wheeling—George J. Priester Aviation

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Valparaiso—Valparaiso Aero Service, Inc.

IOWA
Cedar Rapids—Wathan Flying Service
Des Moines—Des Moines Flying Service
Waterloo—Ben's Aircraft Service

KANSAS
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Wichita—United Airplane Sales, Inc.
Yingling Aircraft Co.

KENTUCKY
Louisville—Aircraft Radio Laboratory

LOUISIANA
New Orleans—Deltair Aircraft Co.

MARYLAND
Baltimore—Air Mod
Hinson Aviation

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Atlantic Aviation Corp.
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Detroit—Anderson Aircraft Radio Co.
Pontiac—Aerodynamics, Inc.
Three Rivers—Ward Aero Service

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Minneapolis—Minnesota Airmotive
Rochester—Gopher Aviation
South St. Paul—Gopher Aviation
Winona—Van's Air Service, Inc.

MISSOURI
Cape Girardeau—Avicom, Inc.
Kansas City—Executive Aircraft Co.
St. Louis—Young Aviation
Springfield—Rapidair, Inc.

NEBRASKA
Omaha—Sky Harbor Air Service

NEVADA
Las Vegas—Alamo Airways

NEW JERSEY
Teterboro—Atlantic Aviation Corp.

NEW MEXICO
Albuquerque—Cutter-Carr Flying Service, Inc.
Santa Fe—Southwestern Skyways, Inc.

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Lindenhurst, L. I.—Dot Airtronics
Rochester—Page Airways, Inc.
White Plains—International Aviation, Inc.
Westfield Aircraft Elect., Inc.

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Greensboro—Highpoint Air Service, Inc.

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Reading—Reading Aviation, Inc.

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Warwick—Eastair Corporation

SOUTH CAROLINA
Charleston—Hawthorne Aviation

SOUTH DAKOTA
Yankton—Airborne Electronic Division of
Yankton Electronic Service

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Memphis—Dixie Air Associates, Inc.
Nashville—Nashville Flying Service, Inc.

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Dallas—Gray Aircraft Service Co., Inc.
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Cruse Aviation, Inc.
Cummings and Groves Aviation, Inc
Lubbock—Champ's Aviation, Inc.
Plainview—Claude Hutcherson Air Service
San Antonio—Matthews Electronics

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Ogden—Southwestern Skyways, Inc. of Utah
Salt Lake City—Salt Lake Aircraft Parts

WASHINGTON
Renton—Renton Aviation

WISCONSIN
Madison—Van's Air Service
Milwaukee—Aviation Radio Co.
Butler Aviation

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Malton, Ontario—Sanderson Acfield Aircraft, Ltd.
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Olathe, Kansas

a chart. A 15-20% saving in fuel consumption is claimed and the engine's critical ceiling is raised to 4,850 ft.

FIRST 6-PLACE LASA-60 LIGHT UTILITY TRANSPORT will roll off the new Lockheed-Azcarate assembly line at San Luis Potosi, Mexico, during February. First production parts entered production last month at the new 55,000-sq. ft. factory, which em-

AVIATION PIONEER FRANK COFFYN, last remaining member of the original Wright Brothers flying team, died of a heart attack on Dec. 10 at Palo Alto, Calif., at age 82. He is shown above (left) with James H. Doolittle and below at controls of a Wright Model B in which Orville Wright taught him to fly, soloing on June 14, 1910 and receiving Pilot's License No. 26. Coffyn was 31 at the time and performed with the 5-man Wright Exhibition Team to promote aviation to the public and potential investors. The Wrights charged county fairs $1,000 per day for each performing pilot and the pilots received $50 per day. Three pilots were killed within a year and a fourth quit, leaving Coffyn the only one to complete the initial two-year contract. In 1944, Coffyn learned to fly a helicopter, receiving the No. 3 helicopter pilot's license in the U. S., joining youthful Stanley Hiller's helicopter firm the next year. He was retired in 1956 as an honorary Hiller executive.

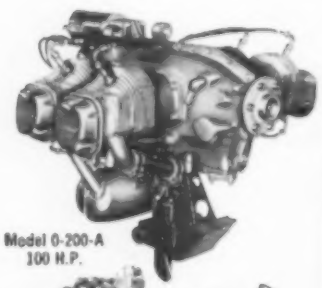
—(Hiller Aircraft Photos.)

CONTINENTAL AIRCRAFT ENGINES

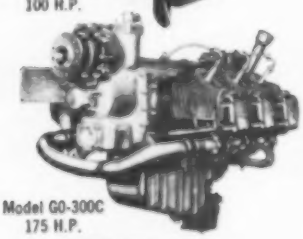
PROGRESSIVE ENGINEERING AND QUALITY MANUFACTURE, PLUS THE BACKING OF ESTABLISHED WORLD-WIDE SERVICE, MAKE CONTINENTAL—NOW, MORE TRULY THAN EVER BEFORE—

FIRST NAME IN UTILITY PLANE POWER

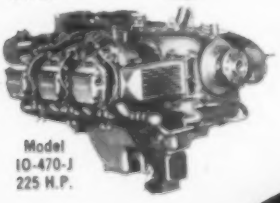
After engine dependability, the most important thing to consider in choosing an airplane is the service behind it—the facilities maintained by its makers to keep it in the air at lowest cost. And here, as on the basic score of engine stamina, planes with Continental power rate uniformly high . . . Owners of such aircraft are sure of finding genuine Continental parts and competent mechanics the world over . . . They benefit in other ways, too, from Continental's policy of backing those who build and those who use Continental-powered products.



Model O-200-A
100 H.P.



Model GO-300C
175 H.P.



Model
IO-470-J
225 H.P.

26 MODELS—65 TO 310 HORSEPOWER

MODEL	HP	RPM	CYL	WT*	OCTANE
A65	65	2300	4	172	73
C90	95	2575	4	188	80/87
O-200-A	100	2750	4	190	80/87
O-300-D	145	2700	6	267	80/87
GO-300-C, D	175	3200	6	309	80/87
E185	205	2600	6	326	80/87
E225	225	2650	6	363	80/87
O-470-G	240	2600	6	432	91/96
O-470-J	225	2550	6	380	80/87
O-470-K, L	230	2600	6	404	80/87
O-470-M	240	2600	6	410	91/96
IO-470-C, G	250	2600	6	430	91/96
IO-470-D, E, F, L, M	260	2625	6	428	100/130
IO-470-H	260	2625	6	431	100/130
IO-470-J, K	225	2600	6	402	80/87
IO-470-N	260	2625	6	423	100/130
TSIO-470-B	260	2600	6	465	100/130
GIO-470-A	310	3400	6	455	100/130

*All weights approximate

Continental Motors Corporation
AIRCRAFT ENGINE DIVISION
MUSKEGON • MICHIGAN

ploys 300 workers and is headed by Generals Abelardo Rodriguez and Juan F. Azcarate. The project is a partnership between Lockheed Aircraft International and a group of Mexican industrialists. The factory has received its No. 2 prototype from Lockheed in Georgia. Its 260-hp. Continental engine is equipped with a turbo-supercharger. The first prototype, powered by an unsupercharged Continental 260, was FAA certificated last April.

EMBITTERED STRIKING PILOTS HAVE STARTED CHARTER AND CARGO SERVICE to compete against Southern Airways. Known as "Superior Airlines," the operation uses 5 de Havilland Doves and crews hired from the ranks of the Air Line Pilots Association.

AIRLINE TRAINING IN PIPER APACHE TWINS is planned by the College of Air Training at Hamble, England. Nine Apache G's were ordered for the college, which will provide all ground and flight training for cadet students who will become airline pilots for BOAC, BEA and other British airlines.

GENERAL AVIATION AIRCRAFT IN MICHIGAN TOTALLED 3,136 IN NUMBER of state registrations as of

(Continued on page 64)

SUPERSONIC VTOL FIGHTER-BOMBER, the Bell D188A, has been designed by Bell Aerosystems Co., of Buffalo under an Air Force-Navy contract. A full-scale model is pictured below. It has 8 J85 jet engines — two at each wingtip and four in the fuselage, of which two are horizontally mounted at the rear and two are vertically mounted forward. Wingtip engines rotate vertically for vertical take-off and landing. Bell says it can take-off vertically and complete its transition to horizontal flight within 60 secs. and can exceed Mach 2 in level flight.

THE MARK 21 IS HERE!

...combining jet-age features into the world's most advanced single engine plane.

Here's why the MARK 21 is best in the realm of business aircraft:

ALL NEW—It introduces jet-age engineering advances to provide superior performance and economy long dreamed of in single engine business flying.

ALL METAL—It has the first all metal wing to retain the full low drag characteristics of LAMINAR AIRFOIL design.

ALL MODERN—Design features and production techniques from the fastest military jet to the newest airliner are blended with Mooney's "World's Most Efficient Design" to create the Mark 21.

CHECK THESE JET-AGE FEATURES IN THE MARK 21:

- New all-metal, flush riveted, aerodynamically smooth, WRAP-AROUND wing design.
- Jet transport integral wing tanks—a first for single engine business aircraft.
- Jet transport-type adjustable tail trim—provides complete cruise trim control.
- Jet type sealed control surfaces—insures better performance.
- New transport type "Z" spar structure.
- New dorsal fin increases lateral stability and speed.
- Simpler, more rugged, retractable tri-cycle landing gear.
- Powered by Lycoming's famous design, newly advanced 180 h.p. engine. The only 180 m.p.h. business aircraft utilizing a 4 cylinder engine—one-third less fuel, one-third less maintenance, and substantially lower replacement cost.
- New interior roominess provides perfect comfort through even the longest journey.
- Luxurious and functional interior styling; rich new fabrics highlighting color-keyed design.*

See and fly the MOONEY MARK 21—the most distinctive business aircraft flying today. Contact your nearest dealer or write:

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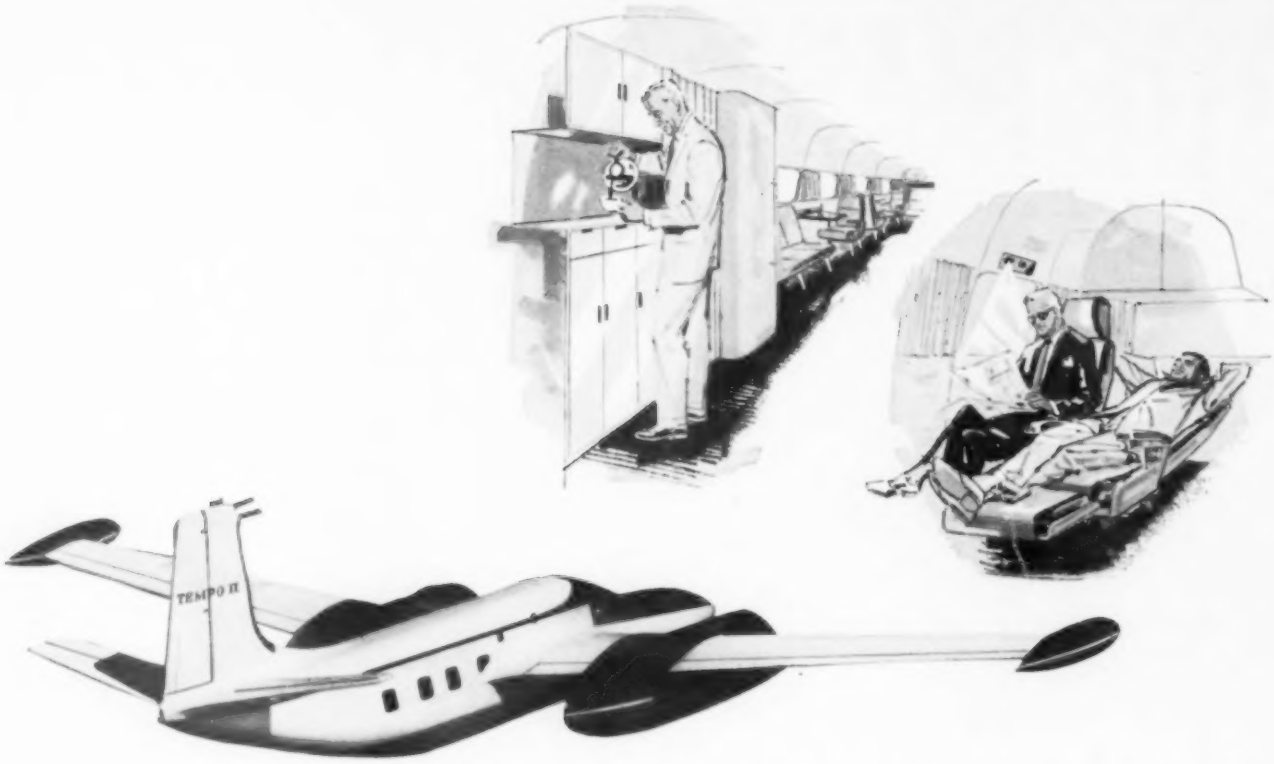
* Styling by Fred M. Gore and Associates, Industrial Designers, Dallas.



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HEAD-ROOM *... Six feet two inches of head-room in the passenger cabin extends up to and into the cockpit ... Neither stooping nor crawling is required by the passengers or pilots in the Tempo II interior.*

WALK-ROOM *... The new, longer-by-far Tempo II cabin has a clear, walk-thru aisleway extending twenty-six feet two inches from the cockpit to the rearmost passenger seat.*

LEG-ROOM *... The entire, man size, custom tailored interior is designed to provide the roominess necessary for work or relaxation ... An uncluttered, ten passenger Executive cabin is achieved by locating the full compliment galley and full height lavatory aft of the cockpit and forward of the main cabin.*

COMFORT-ROOM *... Both passengers and crew have the space to be comfortable in the pressurized, larger-by-far interiors of Tempo II... Airline proven pressurization, permitting above weather, smooth-air flights, is combined with centrally controlled air conditioning and cabin heating to add to the comfort and convenience found only in the high performance Tempo II.*

The high speed, high performance Tempo II, in addition to being larger than any aircraft in its category, is the only Executive version of the famous Douglas B-26 that can be delivered with an Aircraft Flight Manual, approved under CAR Part 4b formula.

A detailed description of the man size, exclusive Tempo II and an analysis of its performance are available on request.

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Open the throttle and see the performance that 260 hp and fuel injection give you in *this* airplane—even with 152 pounds more useful load capacity than ever before!

In the Bonanza's roomy cockpit, everything is located for maximum convenience. Note toe brakes, aileron trim control and throw-over control wheel.

Big baggage compartment has room for 270 pounds. Baggage is accessible in flight. Big, wide door makes loading easy and fast. New apparel shelf, too.

Presenting The New Beechcraft Bonanza For 1961

No matter how well you know the famous Beechcraft Bonanza, you're in for some exciting surprises when you see and fly the new Bonanza for 1961.

The surprises begin the moment you see it. For the airplane that already had the best in-flight visibility for pilot and passengers now has even more, with its new longer rear window.

But the real fun begins when you step inside. A new turn-key starter and the magic of fuel injection bring the engine to life instantly. Cleared for take-off, you open the throttle and almost before you know it you're airborne and climbing fast.

With its new 260 hp engine, the Bonanza now carries 152 pounds more useful load than ever before. Its new 30-gallon auxiliary fuel capacity gives it a new, longer extended cruising range of over 1,200 miles with reserve.

If you like your flying comfortable, this is it! You relax in true Beechcraft comfort in the Bonanza's quiet, elegantly appointed cabin at speeds to 205 mph.

The more you compare, the more you understand why there are more Bonanzas flying today than any other 4-place business airplane in its field.

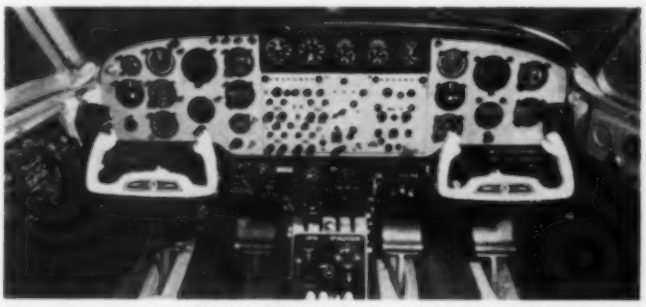
Beechcraft distributors and dealers invite you to see and fly this newest-of-all Bonanzas yourself. Do it soon. You'll be glad you did!

Write today for latest information on low-cost Beech financing and leasing plans. Address Beech Acceptance Corp., Wichita 1, Kansas, U. S. A.

Beechcraft

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

With speeds up to 239 mph, the big, roomy Beechcraft Queen Air is the newest executive aircraft anywhere near its size—designed and built expressly to meet maximum pilot and executive specifications.



Roomy separate pilot "office," designed for dual instrumentation, dual nav-com equipment, radar, etc., offers unsurpassed visibility and comfort.

Conference-room passenger cabin is "whisper quiet," has big double-paned windows and deep foam rubber reclining chairs, or optional lounge arrangements.

See And Fly The New Beechcraft Queen Air

The best possible salesman of a Beechcraft Queen Air is the Queen Air itself. And once you have seen and flown this sensational new Beechcraft, you'll agree it has "more of everything."

Speed? The Queen Air has it—up to 239 mph. Range? The Queen Air's range, with reserve, is over 1,200 miles. Power? Two big 340 hp supercharged fuel injection engines give it to you with plenty to spare — plus precise fuel metering, easier starting, smoother running and complete freedom from carburetor icing.

Room? The Queen Air's cockpit is BIG with leg room, hip room, head room. Even the panel is big, with space for full nav-com systems, dual instrumentation and panel-mounted radar scope. Sliding door privacy, too! The spacious passenger cabin seats 4 to 5 people without crowding. And there's a huge walk-in baggage compartment and private lavatory.

But the best way to learn all about the Queen Air is to look it over in person—and fly it yourself! Beechcraft distributors and dealers invite you to do so. We believe that, as an executive pilot, you owe it to yourself and your company to accept their invitation soon. Why not call now and set the date?

Write today for latest information on low-cost Beech financing and leasing plans. Address Beech Acceptance Corp., Wichita 1, Kansas, U. S. A.

Beechcraft

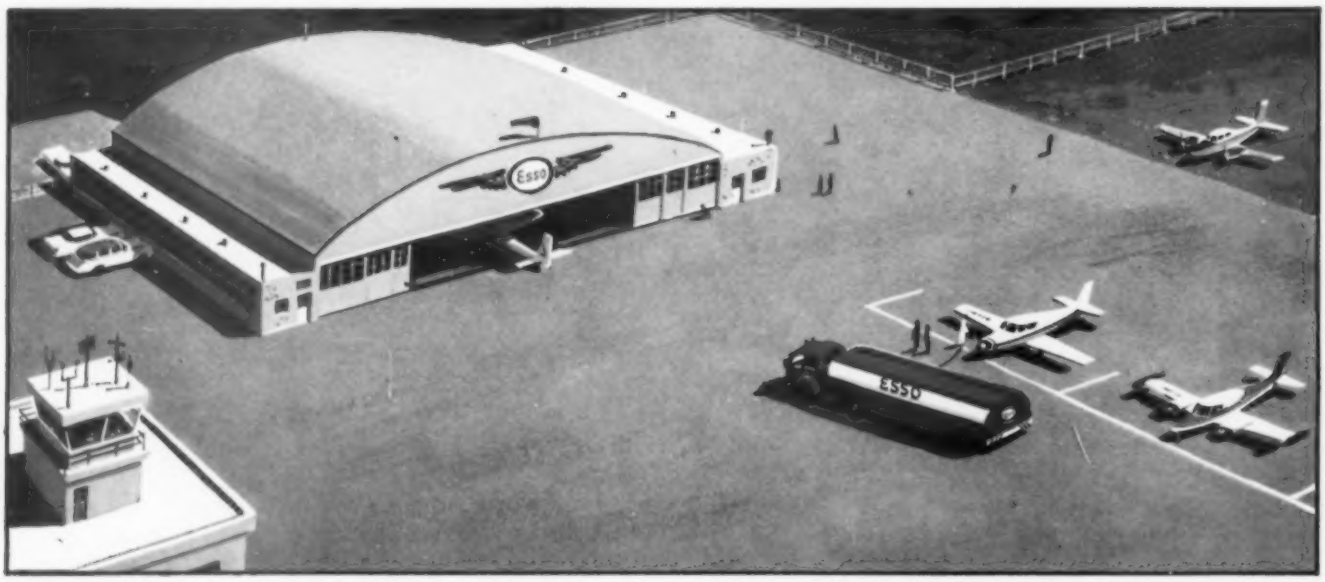
BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

ESSO

WING TIPS

WATCH THE BIRDIE. Whenever your plane is "staked out," even for a day or two, check your engine before take-off. Birds have a tendency to build nests in sheltered spots. An unnoticed nest near an engine in flight can lead to overheating or a mighty serious fire hazard.

DON'T BE AN EAGER AVIATOR. Don't rush to get "upstairs" with the sudden clearing of bad weather. Avoid taking foolish chances. Too many pilots have found themselves in an IFR situation with little or no instrument experience.



A GOOD SIGN. The Esso sign stands for pioneering and leadership in the development of new and improved aviation products. It stands for dependable aviation dealers serving the kind of fuel that helps assure outstanding performance. Esso Aviation Gasoline has low lead content to keep harmful deposits and spark plug fouling to a minimum, thus decreasing wear on vital engine parts. For safety, service, quality products...look first to the Esso sign.

ESSO STANDARD, Division of Humble Oil & Refining Company

Highways or Skyways..."ESSO RESEARCH works wonders with oil"

YOU ASKED FOR IT...HERE IT IS!

THE NARCO ADF-29 AUTOMATIC DIRECTION FINDER

With Revolutionary New Narcomatic Sensor...
Discards Old-Fashioned, Static-Prone, Null-Seeking System...
Operates on Strongest Signal...All-Transistorized...
Draws Only Half an AMP...Weighs Only 8 Pounds...Available NOW!

"Why not a Narco ADF?" For years that question has been asked by the tens of thousands of private and professional pilots and plane owners who have learned to respect and trust Narco Omni and VHF communications equipment. Narco's answer has always been "Not until a new and better design concept for ADF's can be found." Now, after years of steady research, that time has arrived. Narco has an ADF—the incomparable ADF-29—developed and designed by the same Narco people who made safe, reliable, accurate Omni available at practical cost for the vast majority of private pilots and plane owners.

"Just another ADF" was not good enough in the minds of Narco engineers and management—a group made up mostly of seasoned pilots fully aware of the navigation ease offered by a needle that pointed to and brought you to any radio range or homer, marine beacon or standard broadcast station.

Narco's ADF development project was started five years ago with these basic concepts and design goals:

1. **There must be a way to derive direction information from the strongest station signal, not the weakest. Present-day (pre-Narco) ADF's get their information from nothing—that is, home on the null or minimum signal, easily get distracted by extraneous signals such as static and, especially, thunderstorms.**
2. **There must be a way to eliminate the rotating, null-seeking or gonio loop, kept at right angles to the station by costly, delicate, on-off electro-mechanical systems.**
3. **There must be a simpler way to translate direction sensing information to needle indication in front of the pilot.**
4. **There must be a way to substantially reduce weight and electrical power loads, both becoming critical problems in modern, well-equipped business airplanes.**

Narco proudly reports that every one of these major goals has been achieved beyond the most optimistic expectations. The result? The Narco ADF-29—so totally different in concept, so improved in performance, so simplified for better reliability, so compact that all previous ADF designs and concepts are obsolete

NARCOMATIC SENSOR

Heart of Narco's electronic breakthrough is the patented Narcomatic Sensor, which protrudes only 2½ inches from the aircraft's skin, and complements the clean aerodynamic lines of today's fine business airplanes.

Inside there are no moving parts, just three fixed sensing units which compare signal information 100 times a second. Most important, the Narcomatic Sensor derives its information from the strongest, sharpest, most clearly defined signal of the station tuned—not the null. As a result, the ADF-29 is much less affected by thunderstorms, static or other extraneous signals.

COMPACT, PANEL-MOUNTED, ALL-TRANSISTORIZED

The entire ADF-29 combination receiver and tuning unit mounts simply and easily on the panel in an instrument cut-out measuring 6⅜ by 2⅞ inches. Even the direction needle is incorporated in the face plate, eliminating the need for a separate indicator instrument and finding the space for it in the panel. And the indicator has been designed with an oil-submerged, hermetically-sealed meter movement for faster action, constantly precise bearing indication.

Here are other features you'll like about the Narco ADF-29:

Weighs Only Eight Pounds—about half the weight of other ADF's.

Draws Half an AMP—about one-twelfth the power normally used.

Has Manual Volume Control (plus AVC).

Provides For Correction of quadrantal error.

Price complete $895

narco ADF-29

See your Narco distributor or write for ADF-29 brochure,
National Aeronautical Corporation, Fort Washington, Pennsylvania

Our district managers and market research specialists will work for YOU, too, whenever you say the word! Seated, left to right: Bob Jackson, Dallas; Billy Prewitt, St. Louis; Vice President Paul Kennedy, Wes Gallemore, and Jim Briley, Dallas. Standing, left to right: W. L. Waldsmith, Houston; Joe Dodd, Denver; Charlie Truman, Tulsa, and Dutch Barbettini and Dick Seger, Dallas. Inset at right, Bert Conner, Kansas City.

SPECIAL FOR FIXED BASE OPERATORS:

How both of us can make more money in '61!

Obviously, Southwest Airmotive, as a distributor, can make money in '61 only if it helps YOU make money as the man on the Firing Line.

We have spent many years in selecting, and in being selected by, manufacturers turning out items packing the MOST SELLABILITY.

This process of selectivity, market research, and testing continues here around-the-clock. It is our intention to stay ahead as distributor of the newest and best supplies for private and commercial aviation.

Proof of the Pudding was a record-breaking sales surge in our last fiscal year. We think it's fair and reasonable to assume this wouldn't have happened had we not stocked the RIGHT merchandise when, where, and as needed in the field.

We can tie you directly into this program through our district warehouses in Dallas, Houston, St. Louis, Kansas City and Denver. We think it's good business to at least sit down and talk about how both of us can make more money in 1961.

Contact our nearest District Sales Manager or write direct to —

DISTRIBUTION DIVISION

SOUTHWEST AIRMOTIVE COMPANY

LOVE FIELD • DALLAS

Just among ourselves

EDITORIALS

Farewell To Quesada

ONE of the most controversial figures ever to hold a high government aviation position will be leaving us this month when the new administration takes over. You guessed it — he is E. R. (Pete) Quesada, ex-Air Force General, who steps out as Administrator of the Federal Aviation Agency.

Quesada has been one of the hardest workers ever to hold the top Federal aviation post since the government got into the aviation regulation business under the old Bureau of Air Commerce back in 1926. Not only did he inherit a veritable mess when the Civil Aeronautics Act of 1938 was replaced by the Federal Aviation Act of 1958 — a mess brought on chiefly from Department of Commerce control of the old CAA and the failure of Congress to provide the necessary funds for modernization — but he came into the Big Boss' chair under a brand new agency with responsibilities and powers never before conferred on a Federal administrator. He also had a couple of strikes against him before he started because of his predominantly military background. He never quite overcame the handicap of this prejudice against his military career despite the fact he left a very clear record of objective handling of all matters with not one bit of evidence of favoritism to any sector of the aviation family.

We do not believe any newcomer could have taken over the tough assignment of heading up the new FAA without creating some bitter opposition and controversial situations. It is not a job for pussyfooters or lame duck political appointees. Individuals and organizations that bitterly attacked Quesada's motives or integrity were 'way off base. He was open to criticism, as is any man, especially for his penchant for being in a hurry — to get the job done, despite all obstacles, in the shortest possible time. He was often undiplomatic and sometimes inept. But he was honest and he played the game strictly on his convictions and on the best staff and industry advice he could get. In fact he was quite in line with the best aviation tradition — vigorous, forthright and determined.

While we took issue with him and his administration on many points during his short career as head of the FAA, we could never question his motives. The misguided few who attacked him personally are more to be pitied than excoriated.

There are two points that should be clearly drawn at this time when Pete Quesada departs and a new administrator comes in. One is that the Federal Aviation Act was not written to serve aviation. It was written for the benefit of John Q. Public and what's good for him is supposed to be good for aviation. Second, the aviation fraternity had better grow up and face the fact that administrators of the FAA come and go and that we should fight tooth and toenail for principles and leave personalities completely out of our dealings with the government.

The day might even come when Quesada's severest critics admit that he was a good one compared to some yet to serve. We wonder if the new one can do as well.

A Good Year Coming Up

WE'VE just had the pleasure of reading the annual reports of Beech, Cessna and Piper. From them we learn that the past year was the most profitable in lightplane history.

Beech commercial plane sales reached an all-time high of $46,570,254. Corporate profit was $4,854,059. Cessna sold $56,103,605 worth of commercial airplanes and their corporate profit was $7,277,000. Piper Aircraft sold $40,212,000 worth of aircraft for a net income of $3,523,000. These figures indicate a 20 per cent increase in lightplane sales for the "big three" over the previous year.

While aggressive selling is one of the principal factors in this record year, it's quite obvious that product improvement through research and engineering is beginning to pay off handsomely.

Readers of this issue will learn that Mooney has gone to all-metal construction in their 1961 Mark 21. In recent issues we have thoroughly covered the excellent offerings of Cessna, Piper, Aero Commander and Beech. In all of these fine models the most impressive characteristic common to all is product refinement and improvement. The wide variety of power, performance and seating configurations now available to the airplane prospect has reached a new high in the business and commercial plane market. Never before in history has the industry offered the purchaser such an array of models or more for his money than in the new year just starting.

There may be a tendency by some to fret and worry about recent publicity being given certain soft spots in the domestic economy. There always is a certain percentage of people who listen to the calamity howlers and immediately pull in their horns when it comes to sales promotion and merchandising efforts. Let's hope this virus doesn't affect too many of our companies and salesmen because the year coming up should break the 1960 sales records for the distinction of being the best year in the history of U. S. commercial aviation.

Flight Safety Clinics

SEVERAL recent experiences plus long years of a hard look at the unacceptable accident figures in general aviation have about convinced us that safety in this field is primarily a local responsibility, especially insofar as education is concerned. For years it was supposed that all we had to do to improve the accident statistics was to pass rules and regulations. But we've learned sadly that the accident rate remains the same

Tin Goose Island-Hoppers

A behind-scenes report on ISLAND AIRLINES, of Port Clinton and Put-In-Bay, Ohio. Operators of a tin goose tourist service . . . flying school bus . . . corrugated commuter express . . . and ketchup-to-kitchen-sink delivery service. Via venerable Ford tri-motors, vintage 1928.

by HERB FISHER, international aviation authority, veteran test pilot, author

Saga of the skyways . . . last of the Ford tri-motors in airline operation, still on the wing with passengers and cargo after 33 years! Scene is the Perry Monument at Put-In-Bay.

"Maybe you think you've flown everywhere *in everything*. But you haven't lived until you've tiddlywinked around Lake Erie's resort islands in a 1928 Ford tri-motor! That corrugated metal bird behaves like a cross between a helicopter and a grasshopper!" This sage summation typifies those of aviation veterans who've taken the "tin goose tour" of the historic Put-In-Bay area. Of 11 Ford tri-motors known to be still flyin', Island Airlines owns two . . .

You roll a third the length of an aircraft carrier and "grasshopper" off the Port Clinton airstrip. Grossing at 10,000 pounds, you lumber along imperturbably at 80 mph (on 235-hp 7-cylinder Wright radial engines) some 500 feet above open water. You share space with piles of groceries. The second tri-motor pulls alongside—on a freight run—a load of coal and a live cow. It's foggy. You eye the "instrument panel."

"How come so few dials?"

"Don't need many, Herb," grins Chief Pilot Harold Hauck. "No radio, no mixture control—we've got these levers and foot pedals, and a crank and this here ol' steering wheel . . ."

Your "weather forecasting system" is Put-In-Bay's granite monument commemorating Commodore Perry's inland sea victory over the British in the War of 1812: "If we can see the monument *ahead*—as the mainland disappears *behind*—then we've got operational visibility. If we see its top, we've got ceiling enough." The rest of the flight is simply "feeling out" familiar landmarks.

The two tri-motors flip from island to island, transferring commuting businessmen, gawking tourists, the first part of a 14-ton shipment of Christmas wine from island vineyards, squawking crated chickens, shopping housewives, U.S. Mail, somebody's new piano, fresh-caught fish, and youngsters who regard a *flying* school bus as just another daily duty. Your GCA to one fog-shrouded airstrip is a jut of land (turn), two tall trees (line up), a boulder (close throttle), a bog (drop), and the frayed end of a ribbon of asphalt (touch down).

Unique. Offbeat. A mixing of the jenny age with the jet age. It's all of that. And more: In a quarter century of operation—year-round, 7 days a week, vital engine components like spark plugs fully exposed to 10-below Arctic blasts or 90-above moisture-heavy heat—*the tin goose airline has never had a fatality.* And those incredible tri-motors average a takeoff or landing every six minutes—9,000 a year! And they carry 35,000 scheduled passengers a year—plus charter fares! Theirs is a record of safety, dependability and precise regularity that would make any big-brother airline green with envy.

Maintenance Supervisor Rodney C. Lewis installs Champion spark plugs: "We've tried other brands—threw 'em away at 100 hours. Champions? We clean 'em every 100 hours, put 'em right back in. They just *don't* foul out—they give you *full* power *any* time you want it."

Chief Pilot Harold Hauck, 9,000 hrs. in Ford tri-motors and crack mechanic, and Ralph I. Dietrick, 20,000-hr. pilot and president of Sky Tours, Inc., of Sandusky, a 16-plane charter service (Champion-fired Cessnas, a 1933 Boeing, the tri-motors). Sky Tours operates the *tin goose airlift* for 8,000 year-round island residents plus thousands of vacationers, hunters, fishermen.

"Yes, we do have a couple of claims to fame—the taking-offest-and-landingest airline in the world, and the shortest," said Base Manager Newell P. Witte, a 10,000-hour pilot. "Our longest flight leg is 11 miles; shortest, 2 miles. You might say we're the only airline where wheels are still rolling from the last takeoff as you come in for a landing! Up and down like this *constantly*, exposed to the worst kind of operational extremes year after year, those planes and engines take one hell of a beating. That's why we *demand the best* of ourselves in shop maintenance and in parts and equipment. That's why we demand Champion *Foul-Resistant* spark plugs, Herb. We've *got* to have *continuous* full-firing power—available at any moment for any eventuality."

You couldn't pay some of the old-timers around here to get near a modern airliner. Yet the ancient tri-motors are such a part of their lives—they have such confidence in them—that they think no more of boarding one than the average city-dweller would of boarding a bus. Like its wingless relative, the Model T, the Ford tri-motor never seems to wear out—it just simply goes out of style.

"That's the problem," says Ralph I. Dietrick, the airlines' president. "These tri-motors are a vanishing, nearly extinct American tradition—the first and oldest metal workhorse of the skies. For load-carrying capacity and short takeoff/landing, they're irreplaceable—the only type aircraft we can use. Yet, no one makes parts for them any more. Engines—sure, we bought up hundreds of war-surplus Wright engines for $15 apiece, and as long as we fire them with Champion plugs, we have no trouble. But *airframe parts*—fittings, corrugated aluminum and so forth—that's our prime headache. We have to *make* these parts—according to FAA original-equipment specifications. If anybody reading your article, Herb, has *any* kind of Ford tri-motor parts stuck away in his barn, we'd sure appreciate his contacting us!"

Maintenance is done in new facilities at Port Clinton Airport. Transient aircraft, too, get economical service from Island Airlines' crackerjack mechanics. Visiting pilots get the red carpet—including a whirl of the islands in those flying museum pieces. (And let me tell you, that $3 trip is a flying adventure that no amount of money will be able to buy in a few years!)

Don't miss Rattlesnake Island: The big goose drops suddenly toward a piece of pasture that the flight deck of the Enterprise could hold three of. You figure the pilot's cowboying—nothing *but* a helicopter could land there. Then, matter-of-factly, you're settling between a barn, a cliff and some high jack pines. Wing clearance, 30 feet. You drop gently onto wet grass, brake to a turnaround stop at the brink of Erie's rocky shore.

"That's *why* we'll still be operating Fords here when man lands on the moon," Hauck says. "There's just not another plane this size that can do what these can. They'll even fly backwards, Herb. I was fighting headwinds one day and a ferry boat passed me up . . . a few minutes later, gusts topped 65 mph and my goose was going only 15 miles an hour—*straight backward.*"

CHAMPION SPARK PLUG COMPANY • TOLEDO 1, OHIO

Dietrick and Hauck inspect tri-motor overhaul in Island Airlines' new quarters at Port Clinton. First time the wing had been off in 33 years! Unique wing strength of tin goose is due to cantilever, bridge-like construction. Problem: replacement fittings and corrugated "skin" patches. Anybody got any?

Linda Burris, 14, and brother Dale, 16, take "flying school bus" to/from classes every day, think nothing of it. Nearly 400 "plane rides" a year! Believed only place in U.S. where school board appropriates funds for *flying* school bus. Reason: school on one island, home on another, law-of-the-land over all.

despite more airplanes and more regulations.

Effort is being made to improve our primary training techniques so that basic flight training might be able to eliminate some of the causes of our bad accident record. The recent formation of a flight instructors association might produce some beneficial results in this regard.

But how can the problem be faced head on with those who will be knocking themselves off tomorrow, next week or next year? No one seems to have figured this one out.

We certainly do not believe that there's a single, simple solution to the problem. But we would like to report on an activity now gaining momentum which might pay handsome dividends. We refer to local and state flight safety meetings which *originate* locally.

Our own hometown promoted one of these "clinics" recently. Every airport and flight school operator joined in the effort. Local aviation business houses (including a bank) made modest contributions to a fund that covered promotional expenses and a free lunch for all who attended. The Federal Aviation Agency and State Aeronautics Commission were especially helpful in providing program material. Flight instructors and hangar keepers personally invited every known pilot in their bailiwicks to attend. As a result the one-day flight safety seminar drew more than 500 pilots. The sponsors received scores of complimentary letters. It was local, it was timely, full of red meat, with very competent and experienced speakers on subjects that need airing. But most of all, it was *local*. There was a local desire to do something about flight safety education; there was local backing of the project and local attendance.

We're now convinced something can be done to encourage the average pilot to keep out of weather he's not competent to fly, to improve his proficiency, to take occasional flight checks to see if he's developing bad habits, to learn all he can about radio navigation and communications and to review some of the safety practices he was taught when he first learned to fly. Our local flight safety seminar proved that the pilots are interested and will turn out to listen and learn close to home base.

If this simple formula could be applied wherever there are enough student and private pilots to make an audience, we might start a definite upgrading of all pilots and even save a few lives. We do know that education, not regulation, is the main key to the sorry accident rate in general aviation. If interested, the National Pilots Association, 1025 Connecticut Avenue, Washington 5, D. C., will be glad to send you a copy of the one-day program as a helpful guide.

Business Aircraft Showcase

WE'VE been going to air shows, demonstrations, air fairs, air races and trade exhibitions for nearly three decades. So far no one or no organization has come up with the right formula for displaying commercial and business aircraft and associated products to a broad spectrum of prospective purchasers. Of recent years we've been showing our wares to each other and have not reached the real market, yet untapped.

Now comes the Chicago Association of Commerce and Industry with a plan to incorporate a tremendous commercial aircraft display into their highly successful International Trade Fair which is held annually during the summer months right on the Chicago lake front near Meigs Airport.

The strategic location of Chicago leaves nothing to be desired from the standpoint of accessibility. From the experience gained at the International Trade Fair, it is within the realm of possibility to get a million people to look at our wares. Here's an opportunity we can't afford to pass up.

CENTRAL AIRLINES

SERVING THE

SOUTHWEST AND MIDWEST

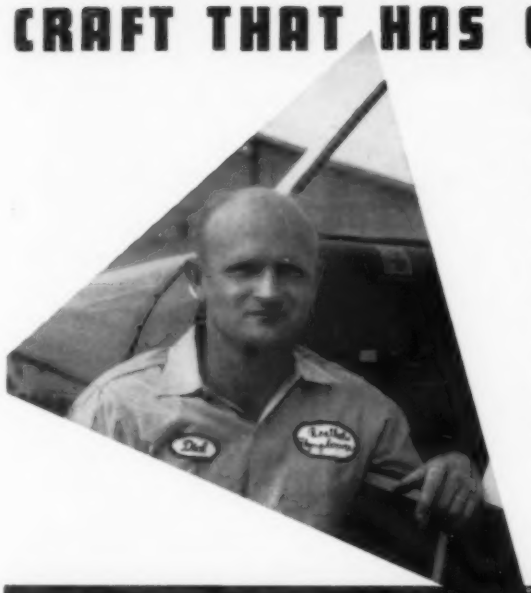
WITH CONVENIENTLY

SCHEDULED FLIGHTS

SINCE 1949

ARKANSAS COLORADO KANSAS MISSOURI OKLAHOMA TEXAS

"...BY FAR THE FINEST AGRICULTURAL AIRCRAFT THAT HAS EVER BEEN PRESENTED..."



Richard P. Rice, owner of Bootheel Flying Service, Kennett, Missouri, reports: "Since I have the oldest continuous aerial agricultural operation in the state of Missouri (15 years of accident-free operation), I feel I am qualified to evaluate agricultural aircraft. I have used a number of types of aircraft and am at present using three Pawnees.

"Without reservation, I should like to say that the Pawnee is by far the finest agricultural aircraft that has ever been presented to the aerial applicating industry. Both my two pilots and I wish to express our thanks to Piper for pioneering the development of the first truly modern agricultural aircraft.

"As you say in you brochure, the Pawnee is truly the answer to an applicator's dream."

SAFEST, BEST, MOST PROFITABLE AGRICULTURAL PLANE YOU CAN BUY

Hundreds upon hundreds of Piper Pawnees in operation throughout the world--dusting and spraying crops and areas with all varieties of agricultural chemicals--have proved beyond question that the only airplane for safe, efficient, profitable dusting and spraying is an airplane specifically designed to do the job. Reports from Pawnee operators attest over and over again that this is a truly remarkable agricultural airplane. More than one pilot is still flying because the Pawnee's "safety capsule" cockpit protected him, exactly as planned and designed.

PIPER Pawnee

Regardless of your dusting or spraying requirements, your investment in a Pawnee or fleet of Pawnees will bring you a higher return per dollar than any other equipment you can buy.

If you want profits, pick the PAWNEE. NEW DEFERRED PAYMENT PURCHASE PLAN. See your Piper distributor or write for new 1961 Pawnee brochure, Dept. F-1.

WORLD'S LEADING BUILDER OF AGRICULTURAL AIRPLANES

PIPER AIRCRAFT CORPORATION

LOCK HAVEN, PENNSYLVANIA

MODERNIZATION

REFINISHING

For Complete Service—See Ohio Aviation

MODERNIZATION SERVICE. Ohio Aviation people are giving fast, economical conversion and modernization service to a growing list of business aircraft operators. It will pay you to investigate the greater convenience and "living room luxury" that Ohio Aviation can build into your plane. Custom made installations to fit your requirements . . . a partial list to the right.

REFINISHING SERVICE. Our Paint Department is equipped to handle all types of aircraft—large or small. With the latest equipment and attention to detail by experienced personnel, you are assured a quality paint job with minimum downtime.

Careful surface preparation and the use of hot paint spraying methods, give you a smooth, long lasting and attractive paint job.

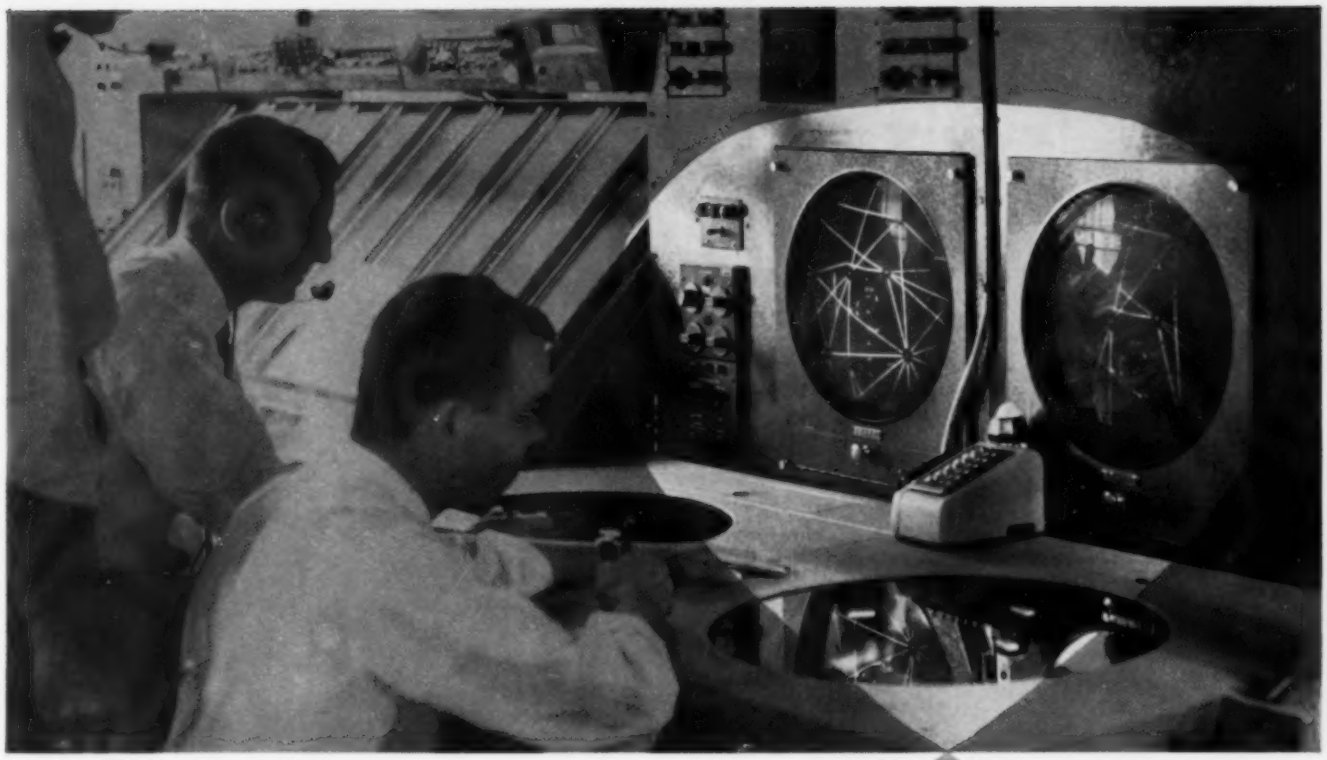
May we send you a quotation for a complete refinishing of your airplane?

Rely on Ohio Aviation for maintenance, modernization, repainting, engine overhaul—for the finest in aircraft service.

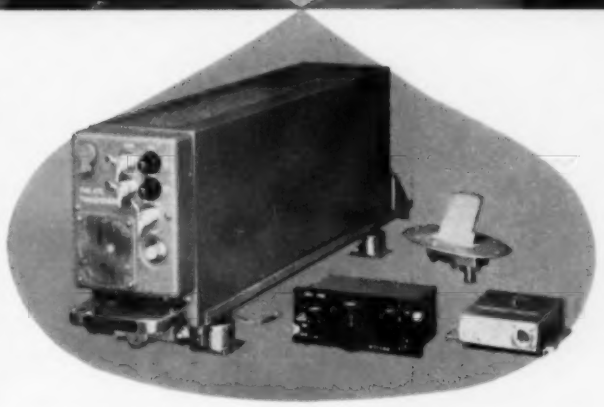
Partial Checklist of Services

Modernization Kits
Complete Paint Service
Engine Overhaul
Radio Installation & Service
Upholstery
Auto Pilot Installation
Radar Installation & Service
Complete Line Service
Custom Cabinets
Step Door Conversion
Inspections
General Service

THE OHIO AVIATION CO. Dayton Municipal Airport • VANDALIA, OHIO



PERFECT COMBINATION
for positive identification
...the Unique Features and Unfailing Performance of the wilcox 714 ATC Transponder



It is a highly reliable Interrogator-Transponder System that provides: positive identification of aircraft under all conditions of weather or traffic . . . facilities for air-to-ground transmission of coded traffic control information. Its compactness and low power requirements make it ideal for use aboard business or commercial aircraft, including the smaller business twins.

Check These Features You Can Count on in the wilcox Model 714 ATC Transponder

- Contains Sidelobe Suppression System which eliminates undesirable replies to sidelobe emissions from the antenna of the ground control interrogator. The dual version of the Model 714 ATC Transponder operates on the 3 and 2 pulse systems, enabling you to use it world-wide. It is also available for domestic use in a 3 pulse only version at considerably less cost.
- Cavity tuned transmitter increases frequency accuracy . . . provides maximum stability.
- Provides positive identification and positive information.
- Contains provisions for automatic altitude reporting.

The wilcox Model 758 Transponder Function Tester

- provides positive indication of a reply to ground interrogation when the panel-mounted indicator light glows.
- provides instantaneous functional checking of operating condition either in flight or on the ground. Pilot simply activates a panel-mounted selector switch . . . when indicator light glows, he knows transponder is functioning.
- weighs less than 1 pound complete!

Count on the Transponder Chosen by these Leading Airlines

Braniff — Eastern — Delta — Pan American
KLM — Northeast — TWA

and by the F. A. A. and U. S. Weather Bureau.

For detailed information and technical data, write, wire or phone . . .

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Electric Company, Inc.
Fourteenth & Chestnut
Kansas City 27, Mo., U.S.A.

Pictured on stage as it was presented to Mooney Aircraft's dealers at their annual sales meeting last month, here's the new 4-place, 180-hp. Mark 21. It has its predecessor Mark 20-A's identical power, dimensions, weight and performance with 180-mph. cruise but is all-metal, has new and roomier interior and other improvements. —(Mooney Photo by Tony Linck.)

New All-Metal Mooney Mark 21

By TOM ASHLEY

ALL-METAL construction is featured by the new Mooney Mark 21 for 1961, introduced to dealers last month as the successor to the Mark 20-A, which had wooden wing and tail construction. The 4-place, 180-hp., 180-mph. Mark 21 retains the predecessor model's weight, performance and dimensions but is priced $545 higher at $15,995.

Using the same original laminar-flow airfoil and wing layout, the new Mooney wing is completely all-metal, as is its all-movable tail assembly and the rest of the airframe. Wood has been completely eliminated. Because the laminar-flow airfoil must maintain a smooth wing surface for its low-drag efficiency, the new shear-resistant spar eliminates wrinkles in the skin in flight. Mooney has also achieved a very high degree of wing surface smoothness for metal construction by using stretch-formed, wrap-around sheets which are flush-riveted except for the area near the trailing edge. Wrap-around sheets eliminate spanwise joints and their drag disturbances.

Dealers attending the annual sales meeting of Mooney Aircraft, Inc., at its factory in Kerrville, Texas, were shown not only the fully-assembled new Mark 21 but all of the new metal components and details of their construction including new-type fasteners and other innovations. The new wing is beautiful and attracted much comment, praising the craftsmanship in metal-working which Mooney has achieved in converting from wood to metal.

Identical performance and efficiency to that of the predecessor model are claimed for the new all-metal Mark 21. Factory data are tabulated with this article. Empty weight went up about 50 lbs., which means that useful load was reduced by that amount since gross weight remained unchanged. The useful load is 960 lbs., which is 38.4% of the 2,450-lb. gross weight. Empty weight is 1,490 lbs.

But Ralph Harmon, vice president in charge of engineering, said that the wing itself weighs approximately pound for pound the same as the former wooden wing. The extra weight went into refinements such as additional and formerly optional features being included as standard equipment.

Hal Rachal, president of Mooney Aircraft, Inc., and Norman Hoffman, president of Mooney Aircraft Sales, which is the factory's sales company, told FLIGHT MAGAZINE they are more optimistic than ever because of the success of the conversion to all-metal construction. It not only eliminates wooden construction's sales resistance but makes the Mark 21 more producible and should reflect production efficiencies and economies when unit volume is increased.

"We expect to produce and sell 330 aircraft during 1961 as contrasted to about 180 units during 1960," Rachal said. "Our dollar volume should increase from a little over $2.5 million for fiscal 1960 to about $4.5 million for 1961. From 330 units in 1961, we expect to increase volume to 500 aircraft for 1962 and 750 in 1963."

The factory plans to produce 3,750 aircraft during the next five years as compared to 700 produced during the last five years — since the 4-place Mooney went into production in 1955, 200 Mark 20's and 500 Mark 20-A's were produced.

Hoffman said he is now engaged in expanding Mooney sales and service outlets from 90 in number at present to 125 by this time next year. He now has 30 distributors and 60 dealers.

Rachal and Hoffman a year ago had planned to bring out the Mark 21 with

Mooney Mark 21

Factory Data

Powered by 4-cyl. Lyc. O-360-A1D, 180 hp. at 2,700 rpm.

Price	$15,995
No. Seats	4
Construction	All Metal
Gross Wt., lbs.	2,450
Empty Wt., lbs.	app. 1,490
Useful Load, lbs.	960
Useful Pct. of Gr. Wt., %	38.4
Useful Fuel, gals.	48
Stall Spd., mph.	57
Top Speed, mph.	190
Cr. Spd., 75% hp. @ 7,500 ft., mph.	180
Cr. Spd., 67% hp. @ 7,500 ft., mph.	172
Cr. Spd., 55% hp. @ 10,000 ft., mph.	164
Cr. Spd., 48% hp. @ 13,000 ft., mph.	151
Max. Range, miles	1,130
Rate of Climb, fpm.	1,150
Svc. Ceiling, ft.	20,000
Take-off Distance, ft.	600
Landing Distance, ft.	550
Wing Area, sq. ft.	167
Wing Loading, lbs. sq. ft.	14.7
Power Loading, lbs. hp.	13.6
Bagg. Cap., lbs.	120
Span, ft.	35
Length, ft.-ins.	23-2
Height, ft.-ins.	8-4.5

NOTE: Performance is for gross weight at sea level unless noted.

Distinctive with Mark 21 is new dorsal fin and paint design. New all-metal wing retains laminar airfoil and squared tips. Manually-retracted gear is easier to operate. Metal control surfaces give more responsiveness. New Mooney has first lightplane integral fuel tanks in wing with standard usable capacity of 48 gals. for 1,130-mile maximum range.

—(Mooney Photo by Tony Linck.)

a 250-hp. engine. In fact, a Mark 20-A was flown with the more powerful engine. It cruised 195-200 mph. but weighed 500 lbs. more. It would have required extensive scaling-up of fuel capacity, gross weight and other dimensions and the result would have placed the Mark 21 in a completely different category all the way around. So the decision was made to retain the 4-cylinder 180-hp. engine for the introduction of the new Mark 21, retaining the Mark 20-A's performance and dimensions.

Although no details were given, officials of the firm told their dealers that the Mark 21 is the first in a "family" of new aircraft the company will market. Perhaps a larger and more powerful Mooney will be in that family. Right now, Rachal said he considers the Mark 21 as the "compact" of the 4-place category, boasting unmatched efficiency and performance in a 4-cylinder class all by itself. "It's kind of like a flying Volkswagen," Rachal said, "and nothing on the market can touch it."

Conversion to all-metal construction began last April after Harmon joined the firm, coming from McDonnell Aircraft in St. Louis. He had previously been with Cessna and Beech. Over $250,000 was invested in the conversion but this included not only engineering but purchases of production equipment and tooling. The factory's production department is completely modernized, incorporating techniques and processes developed only in recent years for jet-age advantages.

The all-metal wing is built up as a single piece or unit and the fuselage is mated to it with 34 attaching bolts after it is completed in the jigs. Constructed in one piece, the main spar's spar caps are extruded from 7075 T-6 alloy. Because the spar caps are turned in opposite directions, a "Z" is formed by the cross-section but the shear web is vertical as in an "I" beam spar cross-section. High-strength fasteners such as Huck bolts, Hi-Shear rivets and AD rivets provided maximum structural strength. Every bulkhead in the wing forms a torsion box which distributes the wing loads evenly over the entire wing.

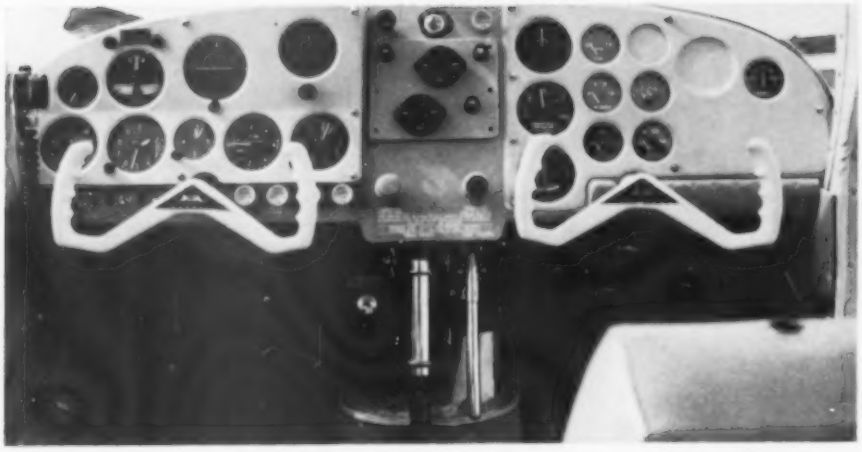
The wing is built on six assembly jigs and each assembly is transferred to a single final assembly wing jig for completion of the single unit. Optically-aligned jigs are used for precision, insuring close tolerances and a truer airfoil.

Wrap-around wing skins are stretch-formed to fit the airfoil shape, the two ends of the sheet being joined at the wing trailing edge. This eliminates

Workers at right are shown at wing's starboard integral fuel tank inside leading edge in front of spar. Rear-seat receptacle is shown behind main spar. Picture below shows sheet of stretch-formed wrap-around wing skin being applied. Note how skin joint parallels airstream — wing has no spanwise skin joints. Flush riveting for skin smoothness extends almost to trailing edge.

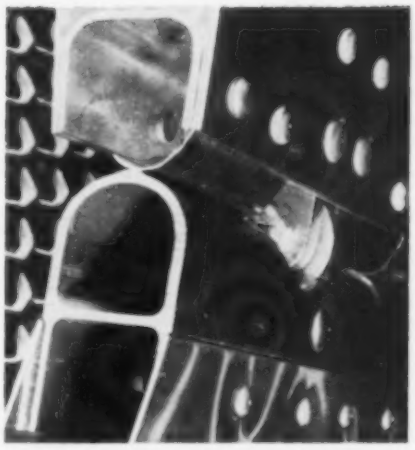
—(Mooney Photos by Tony Linck).

Rear seat is located atop and behind main spar in Mark 21, as shown below with top spar cap aimed aft and bottom spar cap aimed forward. All-metal wing is assembled as single unit, to which fuselage is mated.



New instrument panel in Mark 21 groups flight instruments at left, radio panel at center and engine instruments at right, with circuit breakers under cover at lower right. Below center panel are cowl flap control, landing gear lever and flap handle.

—(Mooney Photo by Tony Linck.)



Sealing for gaps at control surfaces is provided by beading on extrusion used for leading edge of control surface, as shown above. Seal reduces drag.

—(Mooney Photo by Tony Linck.)

any skin laps in a spanwise direction, all joints running fore and aft parallel with the airstream. Flush riveting maintains surface smoothness almost back to the trailing edge, where rivet-head drag is at a minimum. Wing skin thickness runs from .025 at the wing-tips to .032 to .040 to .050 at the root area. All structural wing members are Turco-treated against corrosion and the main spar has a zinc-chromate primer.

The metal wing retains Mooney's modified laminar-flow airfoil employing NACA sections 64-415 at the tips and 63-125 at the root. The same twist is also retained.

Integral 24.5-gal. fuel tanks are located in the leading edge area in the wing root on each side. These are the first integral tanks to be used in a light airplane. They use the wing's construction itself, with long-life plastic compound joint sealing, the same as in transport aircraft fuel tank construction. Integral tanks eliminate the need for separate metal or bladder-type cells inside the wing. Mooney pressure-tested the tanks, which remained leak-proof even when the wing was static-tested to ultimate loads.

New Mooney interior is roomier (note knee room in photo at left). Main spar was bowed rearward to move back rear seat 4.5 inches. Backs of front seats recline. Interior was styled by Fred Gore of Dallas.

—(Mooney Photos by Tony Linck.)

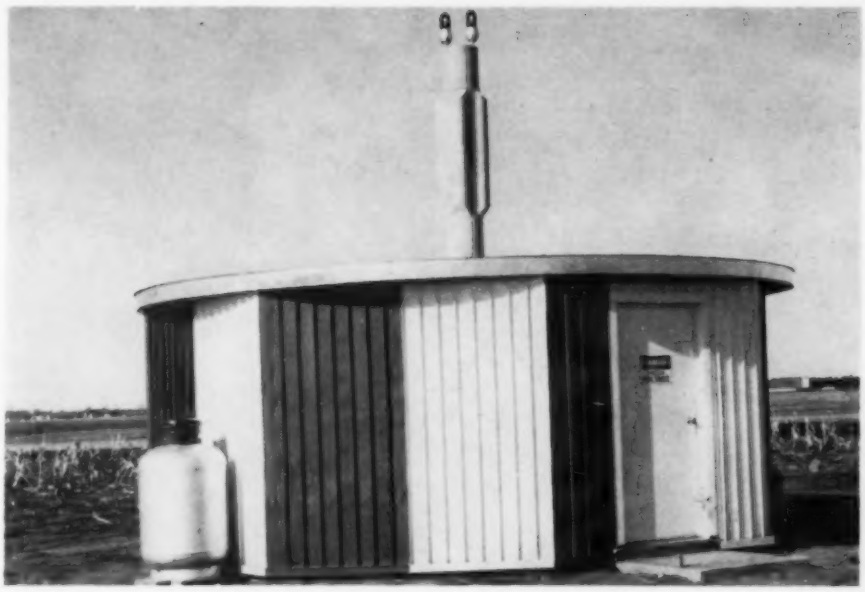
Flaps and ailerons are all-metal. Aileron and flap hinges are machined from extrusions and have metal fairing covers. All gaps at control surfaces are sealed to keep low-velocity air from mixing with the high-speed airstream along the gaps.

The all-metal monocoque tail section structure was strengthened and re-tooled for production.

The forward or cabin section of the fuselage has a truss-type welded steel frame covered with aluminum skin, with quarter-inch tinted windshield glass and three-sixteenth-inch tinted side-window glass.

The all-movable Mooney tail assembly is locked to the fuselage tail cone through a reinforced multiple bulkhead system. Attaching hinges are of heavy, machined metal attached to the tail cone by Huck bolts, Hi-Shear rivets and Hi-Lock fasteners. The tail trimming actuating mechanism is built into the multiple bulkhead system, also. A screw jack, operated by a torque tube from the pilot's trim wheel, trims the aircraft by moving the entire empennage. This screw jack is hollow, containing a steel bolt inside to provide dual-path protection for the screw-jack assembly itself. A short-coupled piano-type hinge absorbs the effects of any unsymmetrical tail loads caused by gusts and frees the screw jack from any side loads. Rudder and elevator leading edges are extrusions to which the metal skin is attached. These extruded leading edges are beaded so that they operate in contact with the trailing edges of the stabilizer units to achieve a sealed gap.

(Continued on page 74)



Here's one of 14 omnirange transmitter stations installed and operated by the State of Minnesota. A new station costs about $35,000.

Dale MacIver (left), Minnesota commissioner of aeronautics, is shown below handing to Mayor Rex Hill of Mankato an FCC transmitter license for the state-owned omni station at Mankato. This station's voice transmission is handled by North Central Airlines agents for the state.

—(Minnepolis Star-Tribune Photo.)

Minnesota's State-Owned Omni System

By DALE MacIVER
Commissioner of Aeronautics
State of Minnesota

THE Minnesota Department of Aeronautics, which has installed 7 new terminal omnirange stations to raise its system of state-owned VOR's to 14, has established cost figures and other information which may be of interest to states and cities with similar problems.

Installation of the 14 VOR stations does not mean that we in Minnesota have any intention of competing with the Federal Aviation Agency, duplicating federal facilities or running our own air traffic control system. But we do have "blank" spots that are not covered by the federal facilities. A few of the blank spots are in heavily-populated country, but most are in sparsely-populated areas with few prominent landmarks.

Seven of our stations are north and west of Duluth — the only federal facility in far northern Minnesota. Our VOR's help pilots obey regulations for the ADIZ and Canadian border crossings. In addition, much of our state is farmland where landmarks look pretty much alike, and it is easy to miss visual checkpoints. The basic intention, of course, is to make VFR flying safer.

Now about those cost figures.

New VOR equipment (Topp) runs about $10,000 for the electronic gear. Installation of equipment is about $3,000; antenna, $4,000; building about $9,000 including heating, air conditioning and power lines, with control line rented from telephone company. That totals up to about $35,000.

Old VOR equipment (Wilcox) runs about $8,500 for the electronic equipment, including antenna and building. Cities benefitted supply the concrete foundation and power lines, with the control line rented.

On test equipment, a VOR test generator is $700; oscilloscope $500; audio signal generator $140; vacuum tube voltmeter $220 and multimeter about $60.

For maintenance, two full-time radio engineers are figured at $1,300 per month. Part-time maintenance men under contract at each station total $760 a month. A spare parts inventory valued at $8,000 is kept on hand.

The FAA flight check every six months at Austin where Ozark Air Lines has a restricted let-down runs about $600.

Special features of the Minnesota system include an antenna of the Alford slot type used on all Canadian VOR stations.

The Minnesota stations are located so a pilot can be in contact with either a federal or state VOR at 1,000-ft. altitude almost anywhere in the state.

The stations are operated by fixed-base operators or airline personnel and in one case the Weather Bureau.

There are some advantages to having the VOR directly on the airport. The cleared area is available — otherwise you would have to buy or rent and clear an area a half mile or more across.

Airport land is ideal land — flat — protected from tall structures by zoning and from interfering power lines. It is accessible for maintenance by road. Power is nearby. It is protected from vandalism. Control lines to the airport terminal building need only be 1,500 feet instead of 2 to 5 miles.

There are also disadvantages to having facilities on the airport. When the Minnesota stations get approved for instrument let-down the IFR pilot will have minimums that are higher by about 100 feet than if the VOR were located a couple miles from the airport. Also, hangars could cause reflections of the radio signal.

As we said, the state VOR's are primarily VFR aids. We do not have public instrument let-down procedures in effect at our stations. If the FAA approves a safe and inexpensive method of adapting these for IFR use, the

(Continued on page 73)

KING WITH MANY CROWNS

By GEORGE E. HADDAWAY

THE annals of aviation are replete with Horatio Alger success stories but few can compare with the meteoric rise of the King Radio Corporation of Olathe, Kansas.

As a matter of fact, very few people now standing in line to buy King aircraft radio equipment had even heard of the company until late in 1959. Edward J. King, Jr., founder and president of the company bearing his name, cut quite a swath in a very short time in other fields of electronics but it was not until April of 1959 that he broke away from prosaic pursuits and moved lock, stock and barrel into aviation radio.

He's glad he did. In 1960 his sales doubled every three months. In 1961 he expects to be producing at the rate of $4,000,000. This is an amazing accomplishment, especially when considering the aircraft radio industry's large number of highly competitive companies with established lines and outlets.

A visit with Ed King in his new factory gives you the impression no one told him he couldn't "bust"into an over-crowded, highly specialized field so he went on and did it anyway. There's an atmosphere of dedicated urgency throughout the factory to maintain the fantastic momentum, not only in merchandising his present lines but in getting on the market early in 1961 with some new equipments that give promise of projecting King Radio into a major source of aircraft radio in the world market — not just the domestic field.

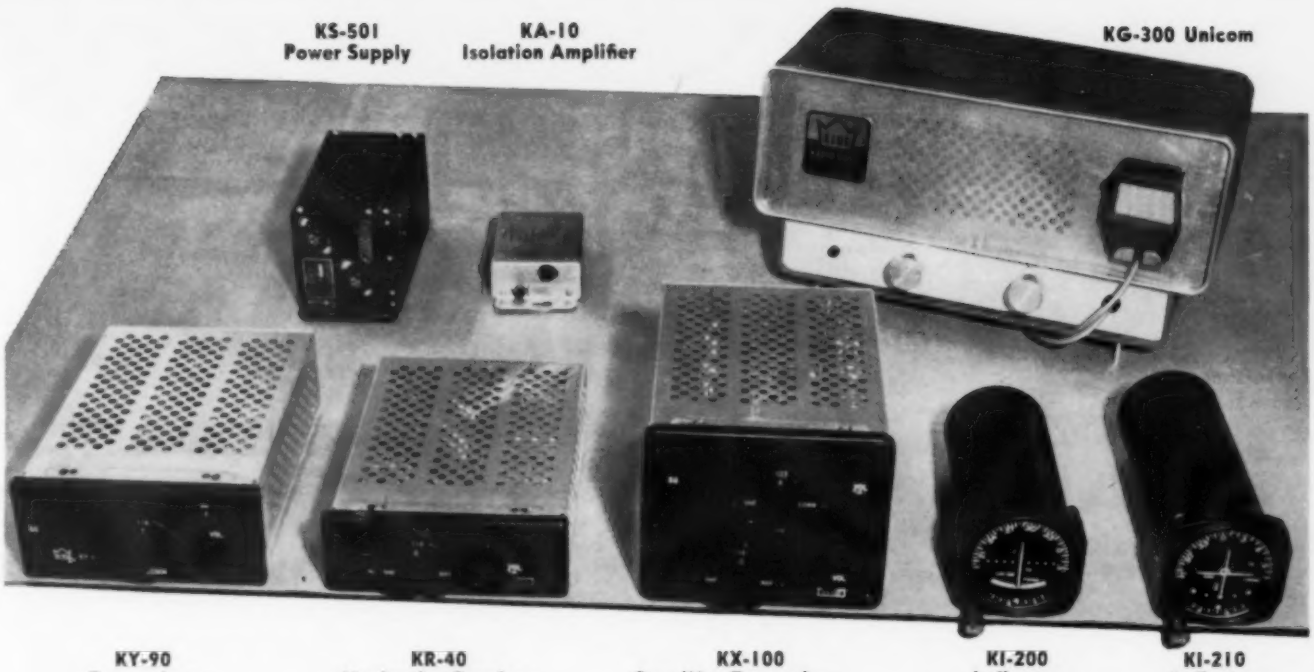
King started building his first radios in 1959 in an old farmhouse on the Kansas outskirts of Kansas City. Less than six months later he realized the quarters were too small. Last November, King made an "interim" move into a remodeled furniutre factory in Olathe, a few miles down the road from the farmhouse. The company has purchased a 12-acre industrial site just outside Olathe on the main Kansas City expressway for their permanent home with plenty of growing room. Construction starts early in 1961 on a $350,000 first unit.

In analyzing the primary factors in the King success story, it would be an over-simplification to list only brains, drive and capital as the main ingredients. King's interest in aviation radio started when he had to buy an airplane to use in his coil manufacturing business back in 1952. As utilization of his airplane increased, so did the use of his radio equipment. He wasn't satisfied and when the opportunity came to sell out his coil business at a handsome profit, he planned for the day he could establish King Radio and apply his electronics knowledge to some of the problems he experienced in the cockpit.

Out of the twenty general aviation meetings FLIGHT MAGAZINE staffers attended last year, Ed King was present at eighteen of them. These do not include the airframe and radio industry committee meetings he attended as chairman of the group working with FAA and FCC to untangle the 50-kilocycle requirement rhubarb nor his committee assignments with the Radio Technical Commission for Aeronautics. King hits all the bases. He rings doorbells. He refuses to sit in an ivory tower or play the big-shot executive. He looks at aviation radio equipment first from the standpoint of the pilot or user and next as an electronics engineer trying to provide quality merchandise at moderate cost.

As a result of his incessant doorbell ringing and attendance of all general aviation meetings since his entry into the market, King has accumulated a total of 148 direct factory dealers, plus an export agent. His main concern in the appointment of representatives is their ability to give service. One of his primary interests is to promote excellent radio service shops so that the customer can get service wherever he flies. Early in 1961, King will initiate a factory training program for his dealers at the factory in Olathe. Dealers and employees will receive a short course in servicing and will be shown all the developments in the works for future marketing. Mike Kloetzel is customer service manager. "Without competent servicing organizations, well spaced geographically throughout the nation, you just can't build real solid customer acceptance," King told us. "I bought a Bonanza in 1952 and had nothing but trouble with my radio and with radio servicing. This experience proved to me that product sales without adequate and competent servicing would be a short-haul, dead-end street."

President Ed King inspects a newly packaged model with (left to right) Bud Wiley, chief engineer; Jim Harris, vice president for manufacturing; Jack Weltsch, vice president for finance; and Bill Kelley, general sales manager.



Another practice he insists upon is severe flight testing of all equipment in the Company Cessna 310 and King's three other airplanes. But much of it is farmed out to the University of Kansas aeronautical engineering department which has King equipment installed in their Cessna 172 and Twin Beech. It's only one phase of strict quality control which follows every component and every assembly all the way from the receiving room to shipping.

King looks upon aviation radio as being a lot like airplanes themselves. A newcomer starts out modestly and buys better equipment as time goes on. His concept is the "building block," modular system. An airplane owner can start out with a simple complement of equipment — the minimum. As time goes on he can add on to the original equipment by simply plugging it in. All King radio equipment is interchangeable mechanically and electrically.

King Radio Equipment

Model	Wt., lbs.	Dims., ins.	Prices 14V	28V
KY-90 Transceiver	8	3 × 6½ × 8	$ 795	$ 895
KR-40 Nav. Receiver	4	2⅛ × 6½ × 8	$ 435	$ 495
KX-100 Com/Nav/Loc	10	5½ × 6½ × 8	$1,095	$1,195
KX-110 KX-100 plus Glideslope	11	5½ × 6½ × 8	Not Established	
KI-200 Omni/Loc Converter/Ind.	2.5	3¼ × 3¼ × 8	$ 645	—
KI-210 Omni/Loc Glideslope Converter/Ind.	3	3¼ × 3¼ × 9½	Not Established	
KS-501-502 Power Supply	NA	3½ × 3⅜ × 6⅜	$ 225	$ 325
KA-10-11 Isolation Amplifier	14 oz.	3 × 4 × 1½	$79.50	$89.50
KG-300 Unicom Ground Station		15 × 8½ × 8	$ 445 (115V)	

KN-50 Nav Receiver with built-in glideslope receiver. No details until testing completed.

Marker Receiver — No details until testing completed.

NOTE: Power supply included in KY-90, KR-40, KX-100 and KX-110.

Married completely to the transceiver concept, which utilizes the same crystal circuitry for both transmitter and receiver, King is able to save both money and weight. He hopes soon to market a 360-channel transceiver in the $1,400 price range. When it comes, the owner of a KY-90 simply plugs in the new set without new wiring or larger space requirements. In the past two years, he made his reputation on the KY-90 ten-watt transceiver, the KR-40 navigation receiver and the KX-100, which is a simultaneous Nav/Com combination of the KY-90 and KR-40 in a single case requiring only 5 by 6½-inch panel space. The King Unicom set and a 14-ounce isolation amplifier also have been big sellers.

His pride and joy will be a complete IFR package, later on in 1961, which

Ed King's inspiration to manufacture improved aircraft radio equipment came from his dissatisfaction with existing radio while flying his own airplane (left). King attends numerous aviation meetings and is pictured at right addressing a recent flight safety meeting in Dallas.

Construction will start in April on King Radio's first factory unit on a newly-acquired 12-acre industrial site near Olathe, Kansas. Shown above is an architect's sketch of the modern new King plant. Ed King started his aircraft radio production in the old farmhouse at left less than two years ago in April, 1959. Last November he moved into an "interim" location in Olathe until his new factory can be constructed.

will weigh less than 30 pounds and sell for around $4,570. The two complete sets with individual power supplies will include the 360-channel transceiver with omni and ILS, the 90-channel transceiver with omni and localizer plus a revolutionary new three-light marker beacon.

The ingenious marker beacon is a single-package design, encased in a molded plastic housing. It employs a loop antenna, integral to the unit, which juts out from the belly of the aircraft, eliminating antenna leads and far removed from heat sources. The only wiring is from this one box to the beacon lights on the panel with the fixed long-wire antenna eliminated.

Flight testing of the glideslope was being pushed in December, both at the factory and Kansas University. Weighing less than 2 pounds, it boasts only 2 tubes and 3 transistors and will meet new Technical Standard Order requirements.

King likes transistor power circuits because if trouble develops, it comes during the early stages of use. Also, vibration doesn't affect transistors. As for printed circuits, King believes they have been abused by people who have expected more from them than they can provide. Printed circuits are all right for some small items but for general application they are kaput as far as King is concerned. Besides, he says, there's a lot of sales resistance in the market to printed circuitry.

In recent years, aviation radio has been demanding more and more crystals in the omni-navigation end of the business. Now the trend is more crystals for communications. Using the transceiver formula, King believes this gives him the advantage over the individual transmitter and receivers

(Continued on page 60)

Here's how production looked in the King plant last month. Most of the plant's 60 employees are women, shown building up aircraft radio components.

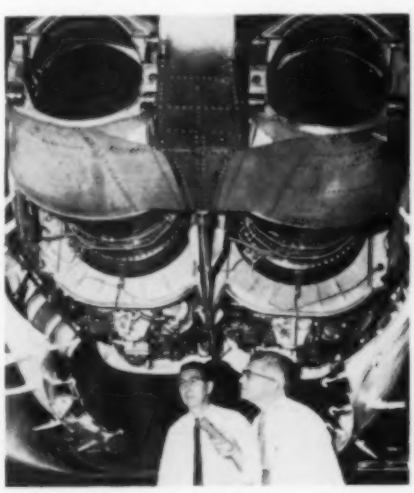
Four JetStars were lined up outside the Lockheed plant in Georgia when this picture was made as workers installed engineering test equipment for FAA flight testing. World's first corporate jet, the 4-engine JetStar is in production and first delivery was scheduled for early 1961. —(Lockheed Photo.)

J. W. Davidson looks over the cockpit (above). Note instrument panel, throttle console, overhead panels. Below are F. T. Melton and K. J. Holloway examining installation of P & W JT-12 jet engines. Note tail pipes.

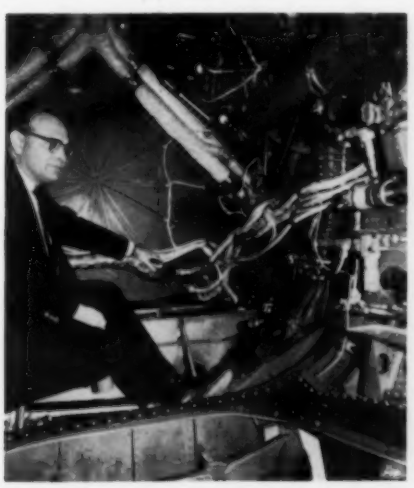
FAA Inspects The JetStar

PREPARATORY to Federal Aviation Agency certification of the 550-mph., 2,700-mile Lockheed JetStar corporate transport, FAA representatives performed an engineering evaluation of the new speedster and its equipment. H. H. Slaughter, FAA Region 2 chief of the engineering and manufacturing branch, headed the pre-flight inspection. His team included specialists in power plants, flight test, airframe and equipment, systems, flight test equipment, manufacturing and operations. Some of them are shown in these pictures.

Landing lights in JetStar installation are checked (above) by J. B. McLaughlin, W. H. Messick and J. M. Murdock. In photo below, E. J. Rudder examines the JetStar's equipment section. Note pressure bulkhead at rear.



Dual-wheel landing gear is studied by H. E. Waterman and Coleman Archer.



Model 210 refinements for 1961 include new third windows at rear of cabin and more headroom. Model 210 tops 199 mph., cruises 190 mph.

—(Cessna Photo.)

New Cessna 210, Skylark and 182

DEALERS joined in nationwide public showings during January of Cessna Aircraft Company's 1961 versions of the high-performance 4-place Model 210, Model 182 and Skylane. Eight other Cessna models for 1961 were shown during November and December — Models 150, 172, Skyhawk, 175, Skylark, 180, 185 and 310F. The 12th model in Cessna's line of 12 commercial aircraft is the CH1-C 4-place helicopter, which was announced in October and will soon make a nationwide demonstration tour before going to dealers.

Like other models already shown, the newest ones are higher in price and feature refinements. The Model 210 at $23,450 is $1,000 higher than last year, the Model 182 is $600 higher at $15,490 and the Skylane is $605 higher at $17,950.

Model 210

Cessna's high-performance 260-hp., 199-mph. 4-place Model 210, distinctive as the only high-wing single-engine business plane with retractable landing gear, features several improvements for 1961 — increased visibility and headroom, restyled instrument panel, key ignition starter, new heating and ventilation system and new interior and exterior styling.

Gross weight remains the same at 2,900 lbs., at which useful load is 1,165 lbs. (up 5 lbs.) and 40.2% of the gross. With a top speed of 199 mph., it cruises 187 mph. on 70% of power at 8,000 feet, having an all-out range of 780 miles in 4.2 hrs. at 186 mph. on standard usable fuel capacity of 55 gals. With optional fuel boosting usable fuel capacity to 70 gals., maximum all-out range at reduced power is stretched to 1,365 miles in 10.6 hrs. Specifications and performance details are tabulated with this article.

Larger windows, including two additional side windows at the rear of the cabin, give 10% more glass area for increased visibility. Additional headroom in an enlarged cabin allows incorporation of new wing fillets for

Here are part of nearly $4 million worth of 1961 Cessnas which dealers flew home following Cessna's annual sales meeting.

—(Cessna Photo.)

Cessna Skylane (above) and Model 182 have shortened landing gear for improved ground handling. Skylane is deluxe-equipped version of the 182. Both are powered by 230-hp. Continental engine. Landing gear speed fairings give Skylane 3-mph. speed advantage at 160-mph. cruise. — (Cessna Photo.)

smoother fairing at the wing-fuselage contour. The baggage door has been redesigned for more tail cone area rigidity, easier operation, a tighter seal and an improved door lock.

A new heater-ventilation system provides a multi-selector valve with positive shut-off for improved control of heated air in the cabin.

A new instrument panel includes a radio-switching console containing a transmitter selector switch, two receiver selector switches and a marker beacon selector switch. All new 1961 Cessnas provide this console when two or more radios are installed. A new fuel flow indicator shows gallons per hour, replacing the gauge which formerly showed fuel flow in pounds per square inch of pressure. A new electric clock with sweep second hand replaces the stem-wind clock formerly used and the glove compartment has a soundproofed lining. A new key ignition starter is provided along with new vibrator-type, retard-breaker magnetos, which provide a shower of sparks for easy starting independent of engine rotation.

A new elevator down-spring, connected to the elevator through the cable system, provides a down force on the elevator for increased stability throughout the center of gravity range, especially for aft-weight conditions. The battery box has been relocated under the pilot's seat.

Structural changes in the rear seat area have made possible greater headroom and more graceful headliner design. New three-position reclining-back front seats have been added as standard equipment. The adjustment lever for the seat is located on the side at the rear of the seat bottom. New recessed plastic handles also make for easier fore and aft seat adjustment. Interiors have been restyled with new fabrics and carpeting. Forward armrests are remolded for more comfort and rear armrests were raised to utilize the full width of the cabin section at thigh level. Angle adjustments of the front seats permit full utilization of headrests. The rear seat cushion has been raised half an inch at the front, while the rear seat back reclines an additional 1.5 inches. The lumbar pad in both front and rear seat backs has been repositioned for improved posture and comfort. Three new interiors include Gothic Autumn brown, Persian Cedar rust and Willow Mist green.

New exterior trim designs come in

1961 Cessna 210

Factory Data

Price	$23,450
No. Seats	4
Engine: Cont. 260 hp. @ 2,625 rpm.	IO-470-E
Gr. Weight, lbs.	2,900
Empty Wt., lbs.	app. 1,740
Useful Load, lbs.	1,160
Useful Pct. of Gr. Wt., %	40
Std. Fuel Cap., gals.	65
Optional Fuel Cap., gals.	84
Oil Cap., qts.	12
Top Speed, mph.	199
Cr. Spd., 75% hp. @ 7,000 ft., mph.	190
Cr. Spd., 70% hp. @ 8,000 ft., mph.	187
Cr. Range, 55 gals., 75% hp. @ 7,000 ft., mi-hrs.	755-4.0
Max. Range @ 10,000 ft., 55 gals., mi.-hrs.	1,075-8.3
Stall Speed, mph.	59
Rate of Climb, fpm.	1,300
Service Ceiling, ft.	20,700
Take-off Run, ft.	740
Take-off Dist. to 50 ft., ft.	1,135
Landing Roll, ft.	520
Landing Dist. from 50 ft., ft.	1,190
Wing Area, sq. ft.	175.5
Wing Loading, lbs. sq. ft.	16.5
Power Loading, lbs. hp.	11.2
Span, ft.-ins.	36-6
Length, ft.-ins.	27-4
Height, ft.	8.15
Baggage Cap., lbs.	120

NOTE: Performance is for gross weight at sea level unless noted.

1961 Skylane and 182

Fcatory Data

	Skylane	Model 182
Price	$17,950	$15,490
No. Seats	4	4
Engine: Cont. 230 hp. @ 3,200 rpm.	O-470-L	O-470-L
Gr. Wt., lbs.	2,650	2,650
Empty Wt., lbs.	app. 1,615	1,530
Useful Load, lbs.	1,035	1,120
Useful Pct. of Gr. Wt., %	39	42.3
Fuel Cap., gals.	65	65
Oil Cap., qts.	12	12
Top Speed, mph.	170	167
Cr. Spd., 70% hp. @ 8,000 ft., mph.	160	157
Cr. Range, mi.-hrs.	675-4.2	660-4.2
Max. Range, mi.-hrs.	845-7.1	835-7.1
Stall Speed, mph.	56	56
Rate of Climb, fpm.	1,030	1,030
Svc. Ceiling, ft.	19,800	19,800
Take-off Run, ft.	555	555
Take-off Dist. to 50 ft., ft.	1,030	1,080
Landing Roll, ft.	560	560
Landing Dist. from 50 ft., ft.	1,310	1,310
Wing Area, sq. ft.	174	174
Wing Loading, lbs. sq. ft.	15.1	15.1
Power Loading, lbs. hp.	11.5	11.5
Span, ft.	36	36
Length, ft.-ins.	27-1	27-1
Height, ft.-ins.	9-5	9-5
Baggage Cap., lbs.	120	120

NOTE: Performance is for gross weight at sea level unless noted.

New for 1961:

CESSNA

announces a great new line
of twelve business aircraft
in five new divisions:

LOW-PRICE 5
PREMIUM 3
UTILIPLANES
THE EXECUTIVE TWIN
ROTARY WING AIRCRAFT

What's your need . . . Name your Cessna

CESSNA
N1296

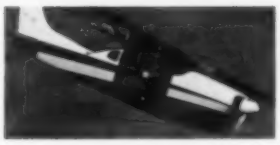
310

The 310 F . . . the world's best all around, light, twin-engine, executive aircraft offers twin 260-hp Continental engines . . . continuous flow fuel injection . . . speeds up to 242 mph . . . all way 'round third window visibility . . . electrically operated retractable landing gear . . . five versatile seating arrangements . . . new needle nose and fuel tip tank styling . . . optional auto-pilot . . . electrically operated split-type, dual-purpose flaps . . . new "eyes-on-the-road" instrument panel . . . spacious baggage compartments . . . extra wide cabin door . . . all this, and the "two of everything that counts" concept, provides true twin-engine safety for the 310 F . . . also provides you with truly twice the buy! How much? It's double your dream of a light twin. That's your answer!

SEATING CAPACITY	Five
MAXIMUM SPEED	242 mph
CRUISE SPEED	220 mph
MAXIMUM RANGE (130 gals.)	1,340 miles
RATE OF CLIMB: Twin Engine	1,800 fpm
Single Engine	440 fpm
TAKE-OFF RUN	800 ft.
LANDING ROLL	620 ft.
SERVICE CEILING: Twin Engine	21,300 ft.
Single Engine	7,700 ft.
BAGGAGE CAPACITY	200 lbs.
GROSS WEIGHT	4,830 lbs.
ENGINE	Two 260-hp Continental Fuel-Injection

All Performance Figures Are Based on Gross Weight

210



How much can you expect and get in a 210 for '61? There's more head room . . . more visibility (with a third window added port and starboard) . . . more grace, elegance, and sophisticated style. And most important, there's proof of performance! Thousands have applauded its distinctive features introduced in 1960 — all the advantages of high-stability wing — plus, positive action, performance proven, fully retractable gear . . . simplified fuel injection . . . a big, dependable, 260-hp engine . . . hydraulically operated Para-Lift flaps . . . "flight command" instrument panel . . . speeds up to 199 miles per hour . . . posture-padded, adjustable seating . . . outside access to baggage compartment . . . and a host of other pertinent points of power, performance, and prestige. All tested . . . all meeting the test!

SEATING CAPACITY	Four
MAXIMUM SPEED	199 mph
CRUISE SPEED	190 mph
MAXIMUM RANGE	1,075 miles
RATE OF CLIMB	1,300 fpm
TAKE-OFF RUN	740 ft.
LANDING ROLL	520 ft.
SERVICE CEILING	20,700 ft.
BAGGAGE CAPACITY	120 lbs.
GROSS WEIGHT	2,900 lbs.
ENGINE	260-hp, Continental Fuel-Injection

All Performance Figures Are Based on Gross Weight

182

How much can you expect and get from the 182 for '61? Here's a quick example: Flight/Sweep STYLING . . . a full four inches lower for superb ground handling and easier entry-exit . . . POWER — and plenty of it, offered by the great, time-tested, service-proven, Continental 230-hp engine . . . SPACE — generous cabin dimensions provide expansive stretch-out, move-around freedom, plus space for long-trip luggage requirements . . . PERFORMANCE — you can cruise at 157 mph or at top speeds of 167 mph, and you have a maximum range of 835 miles non stop! All this plus the exclusive Cessna "stand-by standards" . . . Land-O-Matic gear, Para-Lift flaps, all-metal construction, high-stability wing, and dozens of other performance, power, and prestige features!

SEATING CAPACITY	Four
MAXIMUM SPEED	167 mph
CRUISE SPEED	157 mph
MAXIMUM RANGE	835 miles
RATE OF CLIMB	1,030 fpm
TAKE-OFF RUN	555 ft.
LANDING ROLL	560 ft.
SERVICE CEILING	19,800 ft.
BAGGAGE CAPACITY	120 lbs.
GROSS WEIGHT	2,650 lbs.
ENGINE	230-hp Continental

All Performance Figures Are Based on Gross Weight

SKYLANE

When you buy and fly the Skylane . . . you'll receive all the features in the 182 . . . plus additional speed, range, styling, and a host of equipment extras! More than a dozen equipment items normally considered optional are standard on the distinctively styled, deluxe-equipped, and fully painted Skylane . . . including gyros with engine-driven vacuum system . . . Narco Omnigator, Mark II . . . tinted windows and windshields . . . speed fairings . . . plus many others. And the Skylane . . . the "upper classmate" of the Mighty Middle line . . . is the outstanding dollar value in the medium-priced field.

SEATING CAPACITY	Four
MAXIMUM SPEED	170 mph
CRUISE SPEED	160 mph
MAXIMUM RANGE	845 miles
RATE OF CLIMB	1,030 fpm
TAKE-OFF RUN	555 ft.
LANDING ROLL	560 ft.
SERVICE CEILING	19,800 ft.
BAGGAGE CAPACITY	120 lbs.
GROSS WEIGHT	2,650 lbs.
ENGINE	230-hp Continental

All Performance Figures Are Based on Gross Weight

175

How much stepped-up power, performance, prestige, and dollar-for-dollar value can you expect and get in a 175 for '61? Look it over and you'll get a quick and positive answer. Look at the flight/sweep styling. Study the new "Blend Temp" heating and ventilation system for maximum year 'round comfort. Inspect the new magnetic fuel gauges. Add to these features "floating cowl suspension" and the exclusive Cessna "stand-by standards" . . . Land-O-Matic gear . . . Para-Lift flaps . . . all-metal construction . . . sky-high fashion interior styling . . . and you have the top-value in a low-cost, step-up opportunity for 1961 . . . The Cessna 175 for '61!

SEATING CAPACITY	Four
MAXIMUM SPEED	147 mph
CRUISE SPEED	140 mph
MAXIMUM RANGE	755 miles
RATE OF CLIMB	850 fpm
TAKE-OFF RUN	735 ft.
LANDING ROLL	590 ft.
SERVICE CEILING	15,900 ft.
BAGGAGE CAPACITY	120 lbs.
GROSS WEIGHT	2,350 lbs.
ENGINE	175-hp, "Power-Geared" Continental

All Performance Figures Are Based on Gross Weight

SKYLARK

Brightly, sprightly designed, inside and out, the new, deluxe-equipped, fully painted and distinctively styled Skylark has all the great go-ahead features of the 175, plus many other outstanding extras — extras, such as a complete set of gyro and primary flight equipment, an engine-driven vacuum pump, a new push-button starter, speed fairings, navigation light flasher, sun visors . . . and more! Extras normally listed as optional on other aircraft . . . but standard on the Skylark . . . the "upper classmate" of the top-value, low-cost, step-up class! You'll be agreeably pleased with its economy of operation and maintenance . . . its high re-sale value!

SEATING CAPACITY	Four
MAXIMUM SPEED	149 mph
CRUISE SPEED	142 mph
MAXIMUM RANGE	760 miles
RATE OF CLIMB	850 fpm
TAKE-OFF RUN	735 ft.
LANDING ROLL	590 ft.
SERVICE CEILING	15,900 ft.
BAGGAGE CAPACITY	120 lbs.
GROSS WEIGHT	2,350 lbs.
ENGINE	175-hp, "Power-Geared" Continental

All Performance Figures Are Based on Gross Weight

172

Take the measure of the exciting new 172 and you'll see how much more you can expect and get in '61! For instance, the 172 provides a new fuselage that incorporates a new, more streamlined windshield . . . all-new engine compartment . . . a new, longer, wider, lower look — (three inches lower) . . . a roomier instrument panel for "eyes-on-the-road" operation. . . new fashionably elegant interiors . . . a new, outside baggage door for easy loading and unloading. And the 172 has a "spacious-for-four" size cabin for stretch-out, move-around freedom . . . high-wing stability . . . Para-Lift flaps . . . Land-O-Matic gear . . . Continental O-300-C engine for years of dependable, thrifty operation (the same engine that powered the 172 to two world's non-stop endurance records) . . . and a host of other features . . . all unparalleled in the low-cost, four-place, full-size class!

SEATING CAPACITY	Four
MAXIMUM SPEED	139 mph
CRUISE SPEED	130 mph
MAXIMUM RANGE	790 miles
RATE OF CLIMB	730 fpm
TAKE-OFF RUN	780 ft.
LANDING ROLL	680 ft.
SERVICE CEILING	15,100 ft.
BAGGAGE CAPACITY	120 lbs.
GROSS WEIGHT	2,200 lbs.
ENGINE	145-hp Continental

All Performance Figures Are Based on Gross Weight

SKYHAWK

There's big, big news in '61! For the first time, the 172 has an upper classmate. The Skyhawk. A distinctive, new, deluxe version . . . featuring all the great benefits of the 172 . . . plus such key feature standouts as a new engine-driven vacuum pump . . . new, all-electric, push-button starter on the O-300-D Continental engine . . . a complete set of gyro and primary flight instruments . . . and your choice of six fully painted flight/sweep selections! — And the deluxe equipped Skyhawk is loaded with other extra equipment normally optional on most airplanes! The Skyhawk is a prestige and value-packed standout in the low-cost class.

SEATING CAPACITY	Four
MAXIMUM SPEED	140 mph
CRUISE SPEED	131 mph
MAXIMUM RANGE	790 miles
RATE OF CLIMB	730 fpm
TAKE-OFF RUN	780 ft.
LANDING ROLL	680 ft.
SERVICE CEILING	15,100 ft.
BAGGAGE CAPACITY	120 lbs.
GROSS WEIGHT	2,200 lbs.
ENGINE	145-hp Continental

All Performance Figures Are Based on Gross Weight

How much? You can move — wherever, whenever you please at the rate of two to four miles a minute... aboard your choice of 12 great new Cessnas for '61!... the best, most complete assemblage of balanced business airpower in the history of business aviation! You can explore and expand with a 10-to-1 maneuverability advantage... plotting your plans in practical, easy steps... selecting any one of the additional 5,400 Cessna profitports which lie, in all directions between the cities now served by commercial airlines! Aboard a Cessna, you can set your own schedule... actually gain a big head start on your competitors, in finding, developing, and serving new markets... in supervising field operations... in conserving and utilizing travel time, expense, and energy! It's the profit-proved way to leave competitors... and travel problems far behind.

210

310F

SKYLARK

SKYLANE

SKYHAWK

185

150

SKYHOOK

185

The all-new 185-Skywagon carries six, full-size adults and 270 pounds of extra weight allowance with full fuel at speeds up to 176 mph — or when equipped with floats, will carry five full-size adults with extra weight allowance to spare and full fuel at speeds up to 150 mph . . . presenting a profit-boosting package of extra payload, extra power! An outstanding array of features and options mark it instantly as the most productive and versatile airplane of its class! Easily converted to heavy cargo duty. Quickly adaptable for agricultural spray operation. Interchangeable float, ski, or wheel landing gear . . . 260-hp, fuel injection for nimble performance at full load. "Eyes-on-the-road" instrument panel . . . third window visibility . . . optional long-range fuel tanks . . . and all the other Cessna-proven basic advantages make the 185 Skywagon today's **best** answer for carrying profit-packed payloads.

SEATING CAPACITY	Standard 1 – 2, 4, or 6 Optional
MAXIMUM SPEED	176 mph
CRUISE SPEED	165 mph
MAXIMUM RANGE (with Standard Fuel Tanks)	885 miles
MAXIMUM RANGE (with Optional Fuel Tanks)	1,160 miles
RATE OF CLIMB	1,000 fpm
TAKE-OFF RUN	740 ft.
LANDING ROLL	425 ft.
SERVICE CEILING	17,300 ft.
BAGGAGE CAPACITY	120 lbs.
GROSS WEIGHT	3,200 lbs.
ENGINE	260-hp Continental Fuel Injection

All Performance Figures Are Based on Gross Weight

180

You can speed through the skies and descend directly where the problem is . . . on water, snow, ice, or land . . . in a payload proven Cessna 180 for '61. Easy controllability and stable flight characteristics make operations essentially the same on floats, skis, or the rugged, always dependable spring-steel landing gear! Balanced versatility, plus high-stability wing . . . power-to-spare, 230-hp, smooth, six-cylinder Continental engine . . . Para-Lift flaps . . . all-metal construction . . . Polycloud seating comfort . . . instantly responsive toe brakes . . . two yard-wide doors . . . optional automatic flight system . . . "eyes-on-the-road" instrument panel . . . and dozens of other features give the 180 greater dimensions of profit-loaded travel operations.

SEATING CAPACITY	Four
MAXIMUM SPEED	170 mph
CRUISE SPEED	160 mph
MAXIMUM RANGE	845 miles
RATE OF CLIMB	1,130 fpm
TAKE-OFF RUN	555 ft.
LANDING ROLL	350 ft.
SERVICE CEILING	21,500 ft.
BAGGAGE CAPACITY	120 lbs.
GROSS WEIGHT	2,650 lbs.
ENGINE	230-hp Continental

All Performance Figures Are Based on Gross Weight

150

You'll find an amazing array of big-plane features on the 150 for '61 ... high-stability wing, Land-O-Matic gear repositioned for improved ground handling ... Para-Lift flaps ... all-metal construction ... all-new "eyes-on-the-road" instrument panel ... new rear cabin windows (for an extra 15% in added visibility) ... tubeless tires ... steerable nose wheel ... positive-action brakes ... full 80-pound luggage space ... smooth, powerful, 100-hp Continental engine ... large cabin doors with flush inside door handles and semi-flush window latches ... spacious interiors with optional individually adjustable seating ... and there's much, much more! All adding up to solid reasons why the 150 is the biggest value in two-place airplane history!

SEATING CAPACITY	Two
MAXIMUM SPEED	124 mph
CRUISE SPEED	121 mph
MAXIMUM RANGE	630 miles
RATE OF CLIMB	740 fpm
TAKE-OFF RUN	680 ft.
LANDING ROLL	360 ft.
SERVICE CEILING	15,300 ft.
BAGGAGE CAPACITY	80 lbs.
GROSS WEIGHT	1,500 lbs.
ENGINE	100-hp Continental

All Performance Figures Are Based on Gross Weight

SKYHOOK

The Skyhook for '61 ... Cessna's advanced designed, rotary-wing aircraft .... incorporates new, outstanding, years-ahead engineering achievements of mechanical simplicity for maintenance, performance, and operating ease previously unavailable in rotary-wing aircraft! The Skyhook offers many new "Firsts" in aviation history ... THE WORLD'S FIRST POWER PLANT DESIGNED SPECIFICALLY FOR A ROTARY-WING AIRCRAFT — a supercharged, reciprocating Continental engine ... THE WORLD'S FIRST WORLD-WIDE SERVICE AND PARTS ORGANIZATION — already established and available to every Skyhook owner ... THE WORLD'S FIRST ROTARY-WING AIRCRAFT WITH SIMPLICITY OF DESIGN — there's less moving parts to assure longer service life, minimum maintenance expense ... THE WORLD'S FIRST HOLDER OF AN INSTRUMENT FLIGHT RATING CERTIFICATE FOR A ROTARY-WING AIRCRAFT — made possible by stability (comparable to a fixed-wing airplane) that greatly simplifies control characteristics. All this PLUS the largest, most deluxe cabin area ever developed for a four-place, rotary-wing aircraft ... An exclusive, patented airspeed indicator that automatically indicates maximum speed for existing operating conditions and eliminates mental error ... Cruising Speeds up to 122 mph ... Climb rate of 1,030 fpm ... Maximum Cruising Range of 5.4 hours with auxiliary tanks (90 gallons total, 60 gallons standard) ... and BEST OF ALL, the Skyhook is ready now to create new utility and transportation concepts in travel flexibility for your company! Arrange for a FIRST look! See your Cessna Dealer NOW!

FREE VPM ANALYSIS— With the answers to six simple questions, your Cessna dealer can provide a Value Per Mile Analysis for your company. You can actually see **how little** it costs to travel farther and faster in your choice of 12 Cessna's for '61 and **how much** extra power, performance, and progress you can **expect and get.** Ask your Cessna Dealer for a free VPM Analysis, now. No obligation.

FINANCING — Your choice of 12 new Cessna's for '61 are as easy to **buy** as they are to fly!...for Cessna dealers offer a convenient, practical plan for financing . . . a program designed to provide fast, simple, pre-planned financing service. See your Cessna dealer for the details, and terms, of a financing plan which will put you out front, keep you out front — to stay . . . in a Cessna for '61. Lease plans are also available.

RENT-A-PLANE — If you want to test the profit-proven benefits of a Cessna before you buy . . . if you're looking for the link to make an important travel connection . . . or if you simply want to fly for fun . . . remember, you can rent a plane just like you rent a car! Fly yourself or with pilot provided. Call your Cessna dealer for complete details.

COOPERATIVE OWNERSHIP — If your individual needs do not presently justify sole ownership of the Cessna of your choice, ask your Cessna dealer about group ownership. He'll give you the full details of the popular associate plan for cooperative airplane ownership . . . a practical plan which permits small groups to pool their private air travel budgets in order to economically participate in the progress . . . and fun of flying a Cessna for '61!

LEARN TO FLY AS YOU TRAVEL — Your Cessna dealer has a flight training plan to fit your every-day schedule. Most popular is the "Learn-to-fly-as-you-travel" plan. You can actually take "on-the-job" flight training during business trips! Your Cessna dealer can also arrange an "after-five" and weekend schedule of training, too. And when you solo, your Cessna dealer will present you with a "Cessna Solo Trophy," a clever and handsome piece you'll be proud to put on permanent display in your trophy case, at home or in the office!

"GOLDEN RULE" WORLD-WIDE SALES AND SERVICE — Wherever you go you'll be only minutes away from the Cessna "Golden Rule" service. When you see the Cessna dealer's red and blue pennant shield of service . . . it's a sure sign that your service needs will be handled expertly, economically, and efficiently by factory-trained service technicians — and that you'll get prompt, courteous attention. Across the nation . . . around the world . . . look for the red and blue pennants, the sign of Cessna Golden Rule Service!

ALL AROUND THE COMPANY / Everyone . . . executives, salesmen, production men, field supervisors, new business development men, maintenance and repair personnel, technicians and service representatives, advertising and sales promotion men, purchasing agents . . . and countless others . . . are finding that you can count on Cessna to conserve time, energy, and money. Savings that can be converted to greater success! Here's some of the reasons why: . . . World famous, proven Cessna "go wherever, whenever" flight performance eliminates costly waste of man hours unproductively spent in public transportation waiting rooms or in fighting the energy-draining battle of surface travel congestion. Manpower does double duty . . . with less energy expended . . . when a company adds the proven Cessna plus to its transportation fleet. Fewer men do a bigger job in less time with a Cessna . . . Cessna mobility, range, and speed shave out-of-town . . . out-of-pocket expenses caused by extra meals, lodging expenses. You get there and back sooner in a Cessna . . . and there's no extra fare for extra passengers. Rugged, dependable Cessna construction reduces maintenance costs . . . creates long-life and slow amortization of the low initial cost. Design refinements provide amazing fuel efficiency that literally squeezes extra "go" from every drop of fuel! The Cessna of your choice is the biggest business air travel bargain package offered in the industry! Why wait. See your Cessna dealer . . . NOW!

Cessna®

AIRCRAFT COMPANY
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AUTHORIZED
Cessna
SERVICE

The Cessna dealer displaying the factory authorized service sign represents a symbol for friendliness, hospitality and expert Cessna service featuring

factory-trained mechanics . . .

factory-approved equipment . . .

and a complete stock of genuine factory parts.

Make the most of your Cessna's usefulness by depending on the Authorized Cessna Service Centers listed for assurance that your airplane is always ready to go, always in top condition for reliability, performance and comfort.

Your Cessna is always ready to go

when you depend on the factory authorized Cessna Service Centers listed below.

Aircraft Sales Company
Gregg County Airport
Longview, Texas
Meacham Field
Fort Worth, Texas

The Air-Oasis Company
3353 Lakewood Boulevard
Long Beach 8, Calif.

Airnews, Inc.
260 E. Terminal Drive
San Antonio, Texas

Champ's Aviation, Inc.
Municipal Airport
El Paso and Lubbock, Texas

Clinton Aviation Company
Stapleton Airfield
Denver, Colorado

Coastal Aviation, Inc.
4906 Tampa Bay Blvd.
Tampa International Airport
Tampa 3, Florida

Cruse Aviation, Inc.
International Airport
Houston, Texas

Executive Aircaft Company
701 Perimeter Road
Kansas City, Missouri

Lynch Flying Service, Inc.
Logan Field Box 1575
Billings, Montana

Macon Air Service, Inc.
P. O. Box 2036
Macon, Ga.

Ragsdale Aviation, Inc.
Municipal Airport
Austin, Texas

Southwestern Skyways, Inc.
Municipal Airport
Santa Fe, New Mexico
and Ogden, Utah

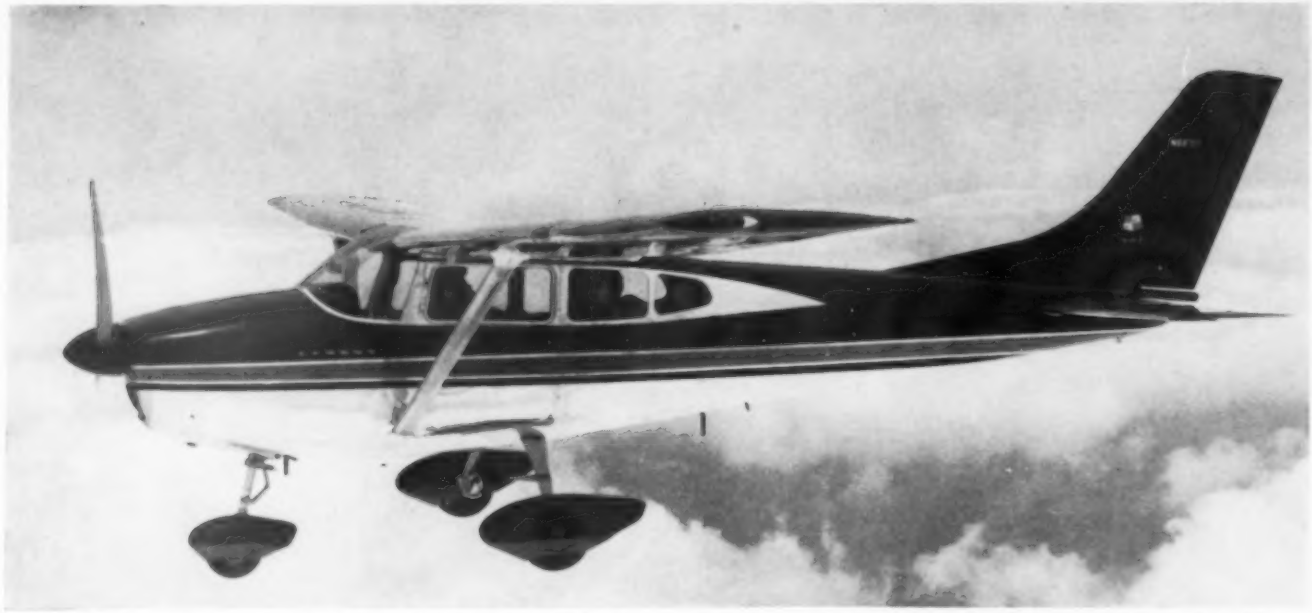
Kenneth Starnes Aviation Service
Adams Field
Little Rock, Arkansas

Sunny South Aircraft Service, Inc.
Broward International Airport
Fort Lauderdale, Florida

Walston Aviation, Inc.
Civic Memorial Airport
East Alton, Illinois

Wings, Inc.
Wings Field
Philadelphia 18, Pa.

Yingling Aircraft, Inc.
Municipal Airport
Wichita, Kansas



Cessna Model 182 (above) and Skylane have greater visibility, stronger nosewheel fork and improved engine cowlings. Wheel pants shown above are optional on Model 182. — (Cessna Photo.)

10 3-color combinations with Pearl white as the common base. Colors include brown and yellow, blue and dark blue, dark green and bright green, red and beige, dark green and yellow, gray and blue, brown and beige, gray and yellow, dark blue and purple and gray and Pearl white.

Equipment available includes single or dual installations of the Narco Omnigator, Narco Mark V and the Motorola LNC-100. Other equipment available includes Narco Simplexer, King KY-90 and KX-100, Sunair T-5, Motorola ADF-12E-2 and Narco MBT-12.

The high-performance 210 set a new sales record for its class by accounting for 575 unit sales during the 1960 model year.

Model 182 and Skylane

Nose and main gear of the 182 and Skylane have been lowered 4 inches to give better ground handling characteristics and they have a new and stronger nosewheel fork, similar to that on the Model 210. Thus the new middle-priced 182 and Skylane have a longer, lower appearance, as well as redesigned instrument panels, key ignition systems, more cabin comforts and other refinements. Both are powered by a 230-hp. Continental engine, gross 2,650 lbs. and have almost identical performance, which is tabulated elsewhere with this article. The Skylane is the equipped deluxe version of the 182 and has, as standard equipment, such extras as speed fairings (wheel pants), a full panel, 3-color over-all paint design and tinted glass.

Cowling on both has been redesigned to provide Camloc fasteners for heavier reinforcing while halving removal time for engine access. The fasteners are identical to those on the 210 and 310 and provide heavier reinforcements around the parting line between upper and lower cowlings. A new lever-type cowl flap control provides more positive adjustment for open, half-open and closed positions.

New black Royalite instrument panels incorporate a modified eyebrow overhang, positions a compass card holder at the upper left center above the gyros and provides a radio selector switch console as on the 210.

New optional front seats are available with three-position hinged backs, said to be more comfortable than complete seat tilting previously offered. Completely new interiors are available in a choice of Pine Frost green and Copper Cotta. New exterior designs for the Skylane include 8 3-color combinations with white-gray-yellow, white-gray-red, beige-brown-white, light blue-blue-dark blue, light blue-brown-white, beige-dark green-bright green, yellow-gray-white and beige-gray-purple. New 2-color combinations for the 182 include light blue-dark blue, white-gray, white-dark blue, yellow-gray, bright green-dark green, white-brown, yellow-brown and white-red.

Cessna has delivered over 2,150 Model 182's since 1956 and over 1,900 Skylanes since 1958.

Cessna Reports 20% Gain in Aircraft Sales; Wallace Expects 1961 Increases Over 1960

CESSNA Aircraft Company's total sales for fiscal 1960 were $103.2 million, 2% down from 1959's $105.7 million, and included $56.1 million in commercial aircraft sales, up 20% over 1959's $46.6 million. Dwane L. Wallace, president, said much of the commercial aircraft gain was brought in by the new Model 210. Export sales were 709 aircraft worth $10.4, up from 494, worth $6.9 in 1959, due to growing worldwide acceptance of general aviation and improved currency relationships with the U. S.

Wallace said Cessna captured 47% of the general aviation market in new aircraft and 36% of the dollar volume. A stretchout in T-37 jet trainer deliveries and Boeing B-52 stabilizer deliveries reduced Cessna's military volume, while reduced military electronics orders cut the volume of Aircraft Radio Corporation, a Cessna subsidiary. ARC's commercial sales were up 21%, however. Cessna's commercial hydraulics sales were also down.

Wallace looks for improved 1961 sales over 1960, with gains for commercial aircraft, ARC, industrial products and McCauley Industrial Corp. products. But Cessna's military volume will decline again. Wallace said Cessna is developing additional commercial aircraft models to penetrate a greater share of the market in future years, is expanding its industrial and agricultural hydraulics with a new plant to be opened in Scotland and is pursuing additional military orders. ARC is broadening its product line to cover the complete general aviation market and McCauley is studying new concepts to develop more efficient, lower cost and lighter propellers.

Bell Model 204B demonstrator is pictured above as it returned to plant from extensive tour, the U. S. portion of which is traced on the map. Demonstrations were flown at 26 points shown by numbers. Maintenance averaged 1 man hour per 15 hrs. of flight time.

New Bell's Tour Performance

WHAT Bell Helicopter started in Paris, France, 18 months ago was finished late in November in Fort Worth, Texas, and Tokyo, Japan — the world-wide introduction of the Bell Model 204B turbine-powered helicopter. Statistics of this exhaustive flight program help tell the story as to the scope of the operation and reflect the unprecedented dependability of the new Bell machine.

The three different Model 204's that participated in the tours collectively logged nearly 400 hours of flight, more than 26,000 miles and performed before untold thousands of persons in 11 countries.

Introduction of the new utility Bell model began in June of 1959 at the 23rd International Air Show held at Paris' Le Bourget Field. An estimated 300,000 persons from throughout the world watched the sleek helicopter perform for the first time. Immediately following the show, Bell's Director of Market Development, Joe Mashman, flew the helicopter on an extensive tour of European and Scandinavian cities. This past summer and fall Mashman piloted another Bell Model 204 on a tour of India and Japan.

Overseas audiences were made up of charter operators, members of Bell's

Utility Helicopter Demonstrates Powerline Construction

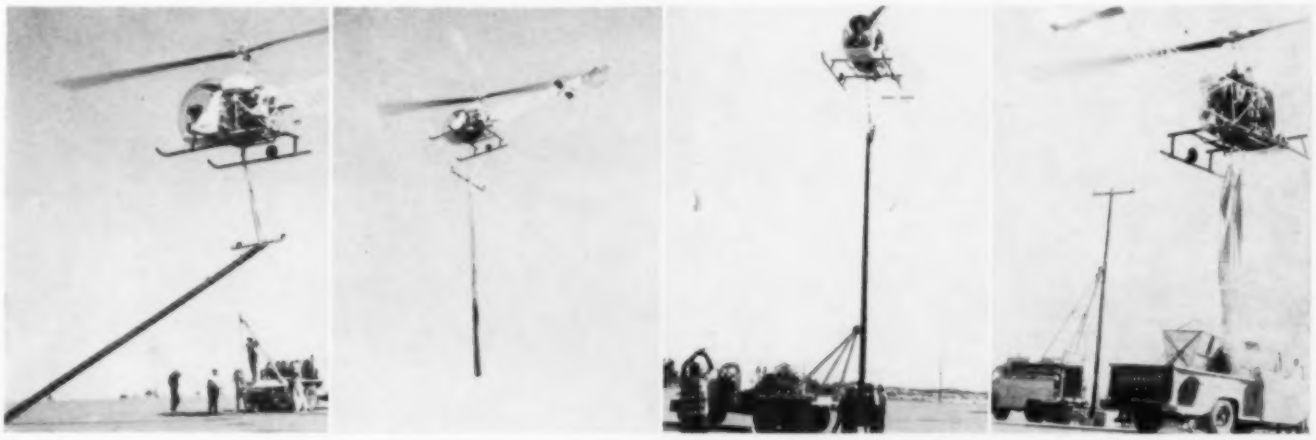
NATIONAL Electrical Contractors were shown how helicopters can help them build powerlines at their association's 51st annual convention in Las Vegas.

As a part of the NECA program, Bell Model 47G-3 and 47J-2 helicopters put on an hour-long demonstration at the convention center grounds. Three commercial charter operators — Calicopters of Stockton, Calif., United Helicopters of Santa Monica, Calif., and Las Vegas Airways — helped put on the show.

Helicopter demonstrations included: airlift and pinpoint spotting of a 35-foot long, 700-pound pole; laying electrical "sock" line from a new type tray dispenser; hauling and pouring half yard of cement from an external sling; miscellaneous cargo sling loads; and, as a finale, aerial application of inert chemical emulsions with a centrifical dispenser from a Model 47G helicopter.

More than 1,000 attended the demonstration and several hundred rides were given during the three-day convention.

Photos show 3-place Bell Model 47G-3 with turbo-supercharged engine lifting, carrying and positioning a 700-lb. pole and unloading a half-yard of cement material while hovering. —(Bell Photos.)



BELL 47G-2A
world's lowest priced
3-place utility helicopter

NEW FOR 1961...

BELL 47G-2A
The Industry's Workhorse

The 47G-2A, successor to the famous 47G-2 . . carries the biggest payload of any helicopter in its class at the lowest cost per mile. Useful load has been increased to 1212 pounds . . speed to 105 mph . . horsepower to 240 for take-off, 220 continuous. And, the 47G-2A will pay out faster than any other helicopter because it costs less to buy . . less to fly.

BELL 47G-3
A High-Performing High Flyer

The powerhouse of its class, the 47G-3 has been reduced in price, yet now carries a bigger payload than ever . . 200 pounds more . . upping its useful load to 1241 pounds! This extremely functional, all-purpose ship performs all the tough jobs . . carries a big payload at any altitude . . operates with money-saving economy . . delivers a full day's work, 365 days a year.

BELL 47G-3
world's lowest priced
high altitude helicopter

BELL 47J-2
world's most popular
4-place helicopter

BELL 47J-2
The Executive's Finest Transportation

The new lower priced 47J-2 gives you more performance, more for your money than ever before. With horsepower increased from 240 to 260, the 47J-2 delivers more payload at sea level up to 12,100 feet than any other helicopter in its class . . just one of the many reasons why it has gained such world-wide acceptance for business and industrial use.

I..THE BEST BELLS YET!

Leaders in performance . . at new, lower prices!

It's hard to better the best, but Bell has done it again for 1961! The three great new Bells for '61 carry the inherent Bell dependability and experience . . plus, greater performance and load-carrying ability . . at a lower cost! To see these new Bells . . to get a demonstration of their amazing capabilities . . write today for the name of your nearest Bell representative. Address Commercial Sales Manager, Dept. 411A, P. O. Box 482, Fort Worth 1, Texas.

You fly more payload pounds per dollar with a Bell.

BELL HELICOPTER COMPANY

FORT WORTH, TEXAS

A DIVISION OF BELL AEROSPACE CORPORATION • A TEXTRON COMPANY

Army Mercy Copters

These photos show some of the U. S. Army's turbine-powered Bell HU-1A Iroquois utility helicopters flown in MATS C-124 transports to Chile, where they operated numerous mercy missions out of field hospitals in the wake of the South American country's recent earthquake disaster. The turbocopters were accompanied by two complete Army air ambulance units from Ft. Bragg, N. C., and Ft. Meade, Maryland — with about 40 pilots, crew members and medical personnel for each unit. Capt. Donald F. Luce of the Army Transportation Materiel Command, St. Louis, was on the spot as liaison officer for his command, which has logistic responsibility for all Army aircraft in providing spare parts. The air ambulance units were the 56th and 57th Medical Platoons.

— (Bell Helicopter Photos.)

57 sales representatives from as many countries of the free world, helicopter airline operators, civil governments and military services.

Concurrent with Mashman's tour of India and Japan, Bell unveiled its Model 204B at the NBAA show in Los Angeles. After the show the ship went on a domestic demonstration tour that extended from border to border, and coast to coast. The white and blue 10-place helicopter made major demonstrations at 26 different points along its route.

With Bell Pilots Elton Smith and Turpine Gerard sharing the flying assignment, the 204B gave evaluation flights at Los Angles, San Diego, Sacramento, Reno, Cheyenne, Denver, Colorado Springs, Omaha, Ft. Leavenworth, Chicago, Dayton, Detroit, Ottawa, Montreal, Quebec, White Plains, Bridgeport, New York, Philadelphia, Lakehurst, Washington D.C., Quantico and Pittsburgh.

Bell Service Representative Bill Newman, who accompanied the 204B on the entire tour, reported that the only maintenance required, other than installation of minor parts, was a routine daily inspection. Impressive is the fact that routine maintenance ratio to flight hours was better than 15:1. That means more than 15 flight hours were logged for every hour of routine maintenance.

Also with the helicopter for the entire domestic tour was Marty Nemec of Lycoming, manufacturer of the 204B's T-53 engine. A representative of Aircraft Radio Corp., Carl Bushong, followed the 204B in a four-place executive airplane.

Performance of the 204B enabled the pilots to maintain the rigid 75-day tour schedule. Although it was started more than 500 times during the tour, all were made with the ship's battery. No auxiliary power was needed. The helicopter flew in all types of weather and 95 per cent of the time it was not hangared at night. Gerard, Smith and Newman all say they cannot recall another helicopter having attracted so much attention wherever it went.

Smith kept up a friendly running duel with the ARC representative who followed the 204B in his single-engine fixed-wing plane. Time after time, the 204B and the four-place airplane would leave an airport terminal at the same time.

From Cheyenne to Denver, Smith in the 204B beat the airplane by ten minutes. From Denver to Ft. Carson, Colorado Springs, the 204B landed 20 minutes ahead of the plane.

Smith explained that although the four-place executive plane has a higher cruising speed, it lost time taxiing and waiting its turn in airport traffic.

"By the time he got off the ground, I was miles away," Smith said.

This is just one of the reasons Bell Helicopter expects a strong interest in its turbine-powered 10-place Model 204B.

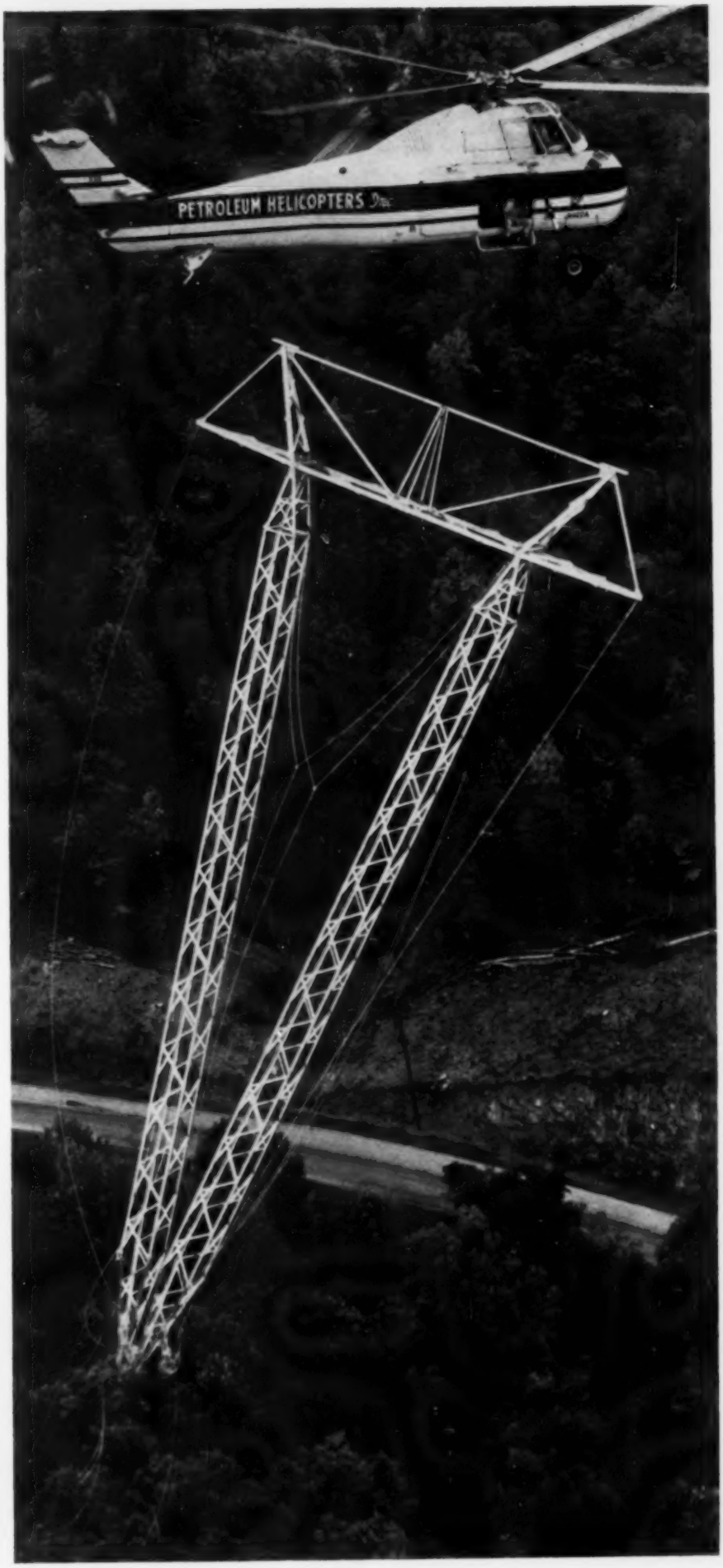
Bigger Loads For Sikorsky

AIRLIFTING of heavy loads over difficult terrain and obstacles for short distances is being performed on an ever-growing scale by commercial helicopters. Sikorsky Aircraft Division of United Aircraft Corporation, reports that continued development and expansion of the helicopter's heavy lift role in the power transmission and pipe line industries is planned for 1961.

Where the familiar piston-powered Sikorsky S-58 is being used efficiently to airlift loads up to almost 2 tons, Sikorsky is readying more powerful multi-turbine Skycranes for heavier loads. It expects within two or three years to certificate Skycranes with payloads in the 6 to 10-ton category. They will be followed by even larger Skycranes and 10 to 20-ton payload capacity is expected to be ready for the commercial market during the 1964-67 period.

Right now, Sikorsky is perfecting the first production S-64 Skycranes for the military as universal tactical vehicles (UTV's). They will be the natural successors to the currently-used piston-powered S-58's in heavy lift. First flights of the S-64 will be made this year.

Use of the S-58 in powerline con-



The S-58 in these photos is the first helicopter used in the U. S. for all phases of powerline construction. Operated by Petroleum Helicopters of Lafayette, Louisiana, it carried bundles of steel, partially-completed towers and even strung the wire to remote sites in Virginia for the American Electric Power Co.

—(Sikorsky Photos.)

Sikorsky's new twin-turbine S-64 Skycrane will operate as sketched above — it will lift 6 to 8 tons as a UTV (utility tactical vehicle) for the military. First flights are scheduled this year. Detachable pods and platforms will carry construction materials, troops, missiles, power generators, field hospitals, liquids in large containers and other items. Hoist operator faces rearward to position bulky cable loads accurately in landing them while the Skycrane hovers. Sketch shows operator unloading construction blocks at remote location. —(Sikorsky Sketch.)

struction in California, Puerto Rico and Virginia is beginning to have an impact throughout the industry. Buying its own S-58 after Sikorsky crews conducted a test operation on the spot, the Puerto Rico Water Resources Authority is saving months in pushing its power lines into remote areas to keep up with new communities and industries needing electricity. Used full-time in extending the lines, the S-58's main role is airlifting poles across the terrain and placing them into holes. These poles are up to 65 ft. long and 3,750 lbs. in weight. They are set abreast of each other in two's or three's to form H-frames carrying the power lines. Whereas conventional pole-setting had cost from $120 to $380 per pole, the S-58 reduced the cost to $35 to $75 per pole. In less than 12 months, the saving totaled about $227,000 — enough to pay for the purchase of the S-58. Stringing the line is also done by copter — at $1,500 per mile per day as contrasted with $4,400 per mile per 14-day average by conventional methods.

Newest job for helicopter cranes is airlifting cargo between ship and shore. It was performed recently by a Sikorsky S-60 crane, powered by two piston engines, when the U. S. Army Transportation Training Command staged triphibious demonstrations to show its latest methods of landing troops and combat materiel in establishing beachheads. The big S-60 hovered above a ship anchored offshore while crewmen attached its hook to a cargo container. The Skycrane then winched the container clear from the ship's hold, wheeled and airlifted it ashore.

While Army cargo ship rides at anchor, Sikorsky S-60 removes container from its hold (below), airlifts it onto waiting truck at beachhead (upper left) and returns to ship for another load in recent Army demonstration at Fort Story, Virginia. —(Sikorsky Photos.)

Best Wishes on your 80th Birthday

Mr. Piper!

It is with deep affection that we extend our sincere wishes for the best in health and happiness to Mr. W. T. Piper, Sr., whom we admire for his sincerity, integrity, and sound business judgment, but above all we hold him in high esteem for his qualities as a man, his fine Christian character, patience, generosity, kindliness and uniform consideration for everyone with whom he comes in contact — in personal life and business.

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Municipal Airport
Little Rock, Arkansas

BAKER AIRCRAFT SALES, INC.
Long Beach Municipal Airport
Long Beach, California

BROWN FLYING SERVICE
International Airport
San Antonio, Texas

CENTRAL MAINE FLYING SERVICE, INC.
Old Town Municipal Airport
Old Town, Maine

CENTRAL PIEDMONT AERO
Smith Reynolds Airport
Winston-Salem, North Carolina

CROW, INC.
Toledo Express Airport
Swanton, Ohio

CUMMINGS & GROVES AVIATION, INC.
8229 Travelair
Houston, Texas

DE PONTI AVIATION CO., INC.
Wold Chamberlain Field
Minneapolis, Minnesota

DES MOINES FLYING SERVICE, INC.
Municipal Airport
Des Moines, Iowa

GILLIS FLYING SERVICE
P. O. Box 2098
Billings, Montana

JONAS AIRCRAFT AND ARMS CO., INC.
Export Sales
120 Wall Street
New York, New York

MEMPHIS AERO CORPORATION
Municipal Airport
Memphis, Tennessee

MIDWEST AIRWAYS, INC.
Gen. Mitchell Field
Milwaukee, Wisconsin

PARKAIRE FIELD
Route 2
Marietta, Georgia

ROSS AVIATION, INC.
Municipal Airport
Tulsa, Oklahoma

SAFAIR FLYING SERVICE, INC.
Teterboro Airport
Teterboro, New Jersey

ST. LOUIS FLYING SERVICE
Lambert — St. Louis Municipal Airport
St. Louis, Missouri

SOUTHWEST AIR RANGERS
El Paso International Airport
Midland Air Terminal
El Paso & Midland-Odessa, Texas

STEWART AVIATION CO. dba
Executive Airmotive, Inc.
P. O. Box 70
Parkersburg, West Virginia

TRANS AIRCRAFT COMPANY
Box 25
Hamilton, Ontario, Canada

ART WHITAKER
Pearson Airport
Vancouver, Washington

William T. Piper is pictured above at his factory last September on the Cub's 30th anniversary. The picture at left shows him in the cockpit of one of his airplanes. He became a multi-engine pilot after bringing out the Apache.

First Cub factory was this wood and tar paper building on a 7-acre airstrip at Bradford, Pa. Company was then Taylor Brothers Aircraft, of which Mr. Piper was a director. This 8,000 sq. ft. plant burned to ground in 1937. Prior to fire, Mr. Piper and C. G. Taylor went their separate ways. First E-2 Cub grossed 1,100 lbs., went into production with 37-hp. Continental engine and was developed at Mr. Piper's insistence to provide airport operators with low-cost trainer. It is shown below. The firm's earlier airplane, the 100-hp. Kinner-powered Taylor Chummy, was a victim of the Depression.

Bill Piper--- Grand Old Man of Private Flying

WILLIAM T. Piper, the Pennsylvania oil man turned airplane manufacturer — the man who made the little yellow Cub famous and went on to build more airplanes than anybody in the world — turned 80 years old on January 8, 1961. Still very much the hale and hearty private flier he has always been, Bill Piper celebrated his 80th birthday by dedicating his company's new branch factory at Vero Beach, Florida, where aviation friends from all over the country gathered to wish him well with a huge birthday cake laden with 80 candles.

Long known as the grand old man of private flying, Mr. Piper was 50 years old before he entered the airplane business. But even though it had been a long time since the Wright Brothers had invented the powered airplane 26 years earlier, there was still opportunity for pioneering in aviation and Mr. Piper proceeded to do just that. Born on January 8, 1881, at Knapps Creek, New York and high-schooled at Bradford, Pennsylvania, he served a hitch in the Spanish-American War with the National Guard,

RESISTOFLEX
TRADE MARK
RELIABILITY

HOW MUCH IS RELIABILITY WORTH TO YOU?

We think you'll agree it's one of the most important considerations in any piece of equipment on your plane.

That's why we think you'll want to know about the Resistoflex aircraft hose assembly, and the complete reliability and peace of mind it brings to you.

The Resistoflex hose assembly features two important elements: the hose itself, made of Fluoroflex*-T, Teflon† processed by a patented method for optimum quality, and the Resistoflex swaged fitting, designed and introduced into the aircraft field by Resistoflex in 1953. This fitting, pioneered for aircraft applications by Resistoflex, has been used in millions of aircraft installations, with never a blowoff recorded in service . . . proof of performance!

Add to that the high strength, non-aging properties and unlimited life of Fluoroflex-T hose and you get the sum: RELIABILITY. And there *is* only one standard for aircraft reliability: 100% reliability—the feature upon which Resistoflex, through the years, has built its business and its reputation. To you the owner, operator, or passenger of a private plane, this reliability is one of the greatest assets you can buy.

Nevertheless, Resistoflex aircraft hose of Fluoroflex is one of the least-expensive hoses available, in terms of unexcelled service life, and elimination of periodic replacements necessary with rubber hose.

†*Du Pont T. M.* **Resistoflex T. M.*

Remember: in aircraft hose assemblies, Resistoflex Means Reliability!

ORIGINATORS OF FLUOROCARBON HOSE ASSEMBLIES

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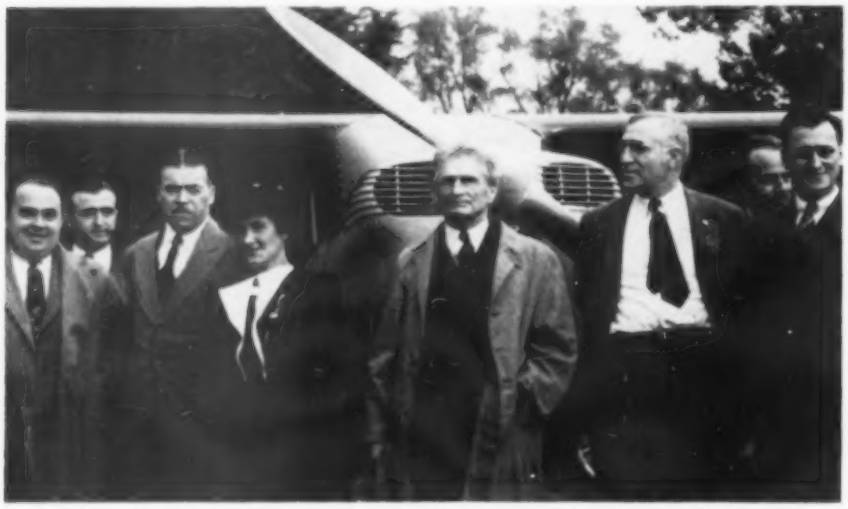
PLANTS IN ROSELAND, N. J. • ANAHEIM, CALIF. • DALLAS, TEXAS

Our compliments to Mr. W. T. Piper, Sr., and the Piper Aircraft Company, an esteemed customer for over 20 years.

After 1937 fire destroyed his Bradford factory, Piper was persuaded to move to Lock Haven by J. W. Miller, Cub dealer and operator of Lock Haven Airport and now Piper's general sales manager. Piper moved into abandoned silk mill, shown above with 1939 Cub Coupes being delivered to CAA Private Flying Specialists (left to right) Rudy Schulte, Joe Horton, Earl Southee, Carl Lienesch, Ed Nilson and Jack Cram.



One of few pictures in existence showing W. T. Piper and C. G. Taylor (two men on right) together was made on 10th anniversary of Cub in 1940. Others in picture include, left to right, L. E. Neville, aviation editor; J. W. Miller; George Kirdendall (pilot of first Cub flight) and his wife, and Bernarr MacFadden, aviation booster and Liberty Magazine publisher. Mr. Piper is shown below with 3-place Cub Cruiser in 1939. Photos with this article are from Bill Strohmeier's collection.

graduated *cum laude* from Harvard in 1903 and became a partner with R. C. Lloyd at Bradford in the Dallas Oil Company and other oil properties. During 1917-18, he was on active duty as a Captain in the Army Engineers.

A prosperous oil man in 1929, he was chosen to represent the interests of local investors when the Bradford Chamber of Commerce subscribed $50,000 in financing Taylor Brothers Aircraft Corporation, which was moved to Bradford from Rochester, N. Y., by C. G. Taylor. Mr. Piper and other directors of the aircraft firm expected to find a ready market for a new 2-place lightplane designed by Mr. Taylor, powered by a 100-hp. engine, priced at $4,000 and called the "Chummy." But Chummy production was barely underway when the Depression dropped airplane sales to zero and Taylor Brothers Aircraft almost went down for the count. Nobody wanted an airplane but instead of withdrawing from the firm, Mr. Piper invested more heavily in it, took a more active interest in its affairs and a glider, eliminating the expense of an engine and propeller, was developed in 1930 by Taylor. From this glider came the first of the Cubs.

First flown on Sept. 12, 1930, the first Cub got its name from its first engine, a 2-cylinder, 2-cycle Brownbach Tiger Kitten. This little motor could barely lift the Taylor Cub over 5 ft. off the ground before it ran out of airport. But on June 15, 1931, after replacing the weak Kitten with a 37-hp. engine, the E-2 Cub was certificated. Priced at only $1,325, it failed to make any money immediately and Taylor Brothers Aircraft went bankrupt that year, only to be reorganized with Mr. Piper as treasurer. It was a struggle just to keep the firm going and the Depression drifted on into 1934 after 22 Cubs were sold in 1931, 22 in 1932 and 17 in 1933.

"Everyone who was still flying was starved into using Cubs," Bill Piper recalls. In 1934 sales climbed to 71, including 4 exported to Brazil, reached 200 the following year and skyrocketed to over 500 in 1936 after the Cub had been given an enclosed cabin as the new Model J-2. That's when C. G. Taylor sold out to Mr. Piper, moving to Alliance, Ohio, where he started his own Taylorcraft Corporation, while Mr. Piper became board chairman, president and treasurer of the Bradford company.

Becoming head of his own airplane factory at 55, the age when some successful men begin arranging their retirement from business, Bill Piper looked forward to the air age with high hopes and anticipation. The Brad-

ford plant had been expanded to 36,000 sq. ft. and was valued at over $200,000. But a year after he took over control, the factory was destroyed by fire. About all Piper got out of it was the publicity, for insurance covered only 5% of its value. But within 90 days, the company moved into an abandoned silk mill at Lock Haven, Pennsylvania, changed its name to Piper Aircraft Corporation, and succeeded in turning out 687 Cubs during 1937 despite the fire.

In 1938, Piper brought out the new Model J-3 Cub. It became the "flivver of the air" and a front-line observation airplane, as well as a trainer, during World War II, with over 75% of Uncle Sam's pilots getting their first training in the Cub. Between Pearl Harbor and V-J Day, 5,673 Cubs were produced for the military forces.

When everybody joined hands to usher in the long-awaited "air age" during 1946, Bill Piper was as enthusiastic as the next manufacturer and the lightplane industry rolled 35,000 new planes out of their factories into the anxious hands of private fliers during 1946, 8,000 of them Cubs and Super Cruisers. But everybody had over-estimated the usefulness of 2-3-place, 75-100-mph. lightplanes and the bubble burst in June, 1947, when Piper Aircraft virtually shut down for reorganization.

Back in business within six months and eager to do some more private flying pioneering, Bill Piper's engineers brought out a new side-by-side 2-place model, the Vagabond, and followed it with the 4-place Clipper in 1949. This became the Pacer and was made really useful in 1951 when its landing gear was modified into a tricycle with nosewheel for ease of ground handling, becoming the Tri-Pacer. Mr. Piper had himself a "businessman's airplane" at last and was to build more than 7,000 Tri-Pacers in less than 10 years. He really cashed in on private air transportation in 1954 when he brought out the lowest-priced light twin, the Apache, followed by the low-wing, all-metal 4-place Comanche in 1958 and the high-performance, 200-mph., twin-engine Aztec in early 1960. Late in 1960 the Tri-Pacer was replaced by a new low-wing, fixed-gear, 4-place, $9,995 Cherokee and Piper brought out a new $4,995 two-place, side-by-side trainer-utility compact, the Colt.

The oil man turned airplane enthusiast late in life has produced over 53,000 airplanes since 1930. In the last 11 years, *since his 69th birthday*, he has turned out over 20,000 lightplanes worth over $200 million in billings. During his 1960 fiscal year, he produced over 2,500 airplanes with

CONGRATULATIONS MR. W. T. PIPER

on the dedication of your Vero Beach Plant

This modern new Piper plant, like your many other enterprises of the past few decades, will be an important contribution to aviation. We think it is appropriate for one of your youth and vitality to begin this new venture on your 80th birthday. And we wish for you, Mr. Piper, a great many more birthdays as eventful and significant as this one.

Mitchell Industries, Inc.

MINERAL WELLS, TEXAS

W. T. Piper is pictured at left in 1940 with his three sons, who are now vice presidents of the firm. Left to right are Tony, who did test work and was an Army liaison pilot; Mr. Piper; Howard (Pug), and Bill, Jr., now executive vice president.

billings topping $40 million.

Today at 80, Bill Piper is still intensively active, although his three sons are Piper Aircraft vice presidents and do most of the work — William T., Jr., Howard (Pug) and Thomas F. (Tony). In 1960, for example, he traveled over 40,000 miles, visiting 18 states and Canada. These are business trips — Bill Piper has missed very few opportunities in the last 30 years to attend an aviation conference, an air tour, a sales meeting. He probably has attended more such affairs than any one individual in general aviation since he learned to fly in 1931. But his main efforts were devoted to building up his company. The following figures show his success at that task during the 1950-1960 period:

Fiscal Year	Sales (Millions)	Net Before Taxes (Millions)
1950	$ 3.9	$0.2
1952	10.1	1.2
1954	11.4	0.9
1956	25.1	5.7
1958	27.1	4.8
1960	40.2	7.5

This is the remarkable accomplishment of Bill Piper, private flying's grand old man who knows thousands of users of his airplanes because he personally goes to all of their get-togethers, yaks with them at fly-ins, flies with them on air tours and pokes around the smallest airports and landing patches as one of the boys rather than as a stuffed-shirt industrialist. In a young man's game, Ole Bill has had the energy, the glint in his eye and the optimism it takes to go places in general aviation — whether business is good or bad, up or down, there's always the beckoning horizon.

Among Piper experimental designs which never went on the market were the three aircraft shown at left. At top is the Cub Clipper amphibian in 1930, with Designer Roy Applegate. Under the transport nose is the 1945 Piper Skycycle, made from a Corsair wing tank with 55-hp. Lycoming engine. The 1945 pusher was pretty and practical but didn't fly well because of problems with the pusher engine installation.

Mr. Piper On the Go — 48 Trips in 1960

When FLIGHT MAGAZINE started itemizing W. T. Piper's travels during 1960, nobody knew how far he had traveled. He made at least 48 trips to 18 states — a lot of activity for a man turning 80! Here's Mr. Piper's log as we were able to compile it:

JANUARY — Jan. 26, Ottawa, Canada.

FEBRUARY — Feb. 3, St. Louis. Feb. 5, Las Vegas. Feb. 8, Oklahoma City. Feb. 15, Indianapolis. Feb. 18, Pensacola, Florida. Feb. 22, Ft. Lauderdale, Florida. Feb. 25, Crookston, Minnesota.

MARCH — Mar. 3, Washington, D. C. Mar. 20, Wichita. Mar. 22-23, Boston. Mar. 27, Minneapolis. Mar. 28-29, Huron, S. D.

APRIL — April 28-29, with the Kansas Flying Farmers.

MAY — May 1, Midland, Texas. May 3-4, Washington. May 5-6, with the Pennsylvania Aviation Trades Association at Bedford. May 7, Sunbury, Pa. May 13-16, Andrews Air Force Base, Washington. May 17, Ft. Lauderdale.

JUNE — June 3-4, Reading, Pa. June 14, with the Boston Flying Club. June 20, Washington. June 25-26, Memphis Naval Air Show.

JULY — July 17 — Norfolk. June 18, with the Flying Lawyers Association at Wichita. July 19-24, with the Navy at Washington and on tour.

AUGUST — Aug. 1, with the Prairie Farmers in Indiana. Aug. 6-7, with the Flying Farmers in Oklahoma.

SEPTEMBER — Sept. 6-9, with the Flying Physicians Association in Oklahoma. Sept. 18, Blair County Airport. Sept. 20-22, with the National Business Aircraft Association in Los Angeles. Sept. 25-26, El Paso, Texas.

OCTOBER — Oct. 6-8, with the National Pilots Association in Oklahoma. Oct. 14, Des Moines. Sept. 18-19, Tulsa. Sept. 20-21, with the Strategic Air Command Aero Club Conference in Oklahoma City.

NOVEMBER — Nov. 1-3, with Piper distributors at annual sales meeting, West End, Bahamas. Nov. 9, Lima, Ohio. Nov. 20-21, Des Moines. Nov. 30, Norwood, Mass.

DECEMBER — Dec. 2, Omaha. Dec. 2-4, Clearwater, Florida. Dec. 17, Kansas City. Dec. 18, St. Louis.

Congratulations, Mr. Piper!

... ON YOUR BIRTHDAY
... AND ON YOUR NEW PLANT AT VERO BEACH....

Grimes
MANUFACTURING COMPANY
URBANA, OHIO

World Leader In Aircraft Lighting.....

A Happy 80th Birthday
MR. W. T. PIPER
And Congratulations
On The
Formal Opening
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Vero Beach Facilities

Rebat
EXECUTIVE
World's Finest Aircraft Battery

THE ELECTRIC AUTOLITE CO. TOLEDO 1, OHIO

PIPER AIRCRAFT COMPANY'S TOP DISTRIBUTORS, who led the firm's outlets in unit sales of aircraft during 1960, are pictured above as winners of "hi-hat" awards. Left to right are: Kneeling — Glenn White, Trans Aircraft, Hamilton, Ontario; Lloyd Brown, Brown Flying Service, San Antonio; Roy Neal, Wes-Tex Aircraft, Lubbock; Howard Gregory, Des Moines Flying Service, and Reggie Griffith, Louisiana Aircraft, Baton Rouge, with Piper Sales Manager Jake Miller. Standing — Piper Assistant Sales Manager W. C. Smith; Groff Steinemann, Jonas Aircraft, New York; Leon Enk, Baker Aircraft, Long Beach; President W. T. (Bill) Piper; Jim Hammond, Memphis Aero; George Edgcumbe, Tufts-Edgecumbe, Elgin, Ill.; Mario Lucci, Lucci Aircraft, Sarasota, and Arch McEwen, St. Louis Flying Service. Not present for picture was Art Whitaker, Portland. —(Piper Photo.)

Piper Honors Leading Distributors

AT its recent annual sales meeting on Grand Bahama Island, off the coast of Florida, Piper Aircraft Company announced winners of traditional awards for distributors who led the field in aircraft sales during 1960. Baker Aircraft Sales of Long Beach, California, led domestic unit sales and Jonas Aircraft, New York, was top export distributor. Lucci Aircraft, Sarasota, Florida, set a new record by winning the "chief quota buster" award for the "B" sales team for the fourth consecutive year, and Arkansas Aviation Sales of Little Rock won the "A" team title for the third year in a row. Baker Aircraft and Jonas Aircraft were also leading members of the "million dollar club" for 1960, membership in which was won by 16 domestic and 2 export distributors having 1960 sales volume in excess of $1,000,000 each. Piper's 1960 sales totaled $52 million in retail value, largest in the firm's history, as compared to $44 million for 1959. Piper's 1961 sales goal is $62.5 million in retail value.

QUOTA BUSTERS AMONG PIPER AIRCRAFT DISTRIBUTORS for 1960 are shown below. Left to right are: Kneeling — Lloyd Brown, San Antonio; Reggie Griffith, Baton Rouge; Roy Neal, Lubbock; Ray Epperly, Stewart Aviation, Parkersburg, W. Virginia; Leon Enk, Long Beach, and Harold Swank, Scranton Airways, Clarks Summit, Pa. Standing — Jim Hammond, Memphis; Jim Boswell, Central Aviation, Birmingham; Mario Lucci, Sarasota; Dave Feltus, Arkansas Aviation Sales, Little Rock; Arch McEwen, St. Louis; Walter Nix, Parkaire, Marietta, Ga., and Piper Sales Manager Jake Miller. —(Piper Photo.)

KING WITH MANY CROWNS

(Continued from page 30)

now on the market. For example, he can get a 1½ system out of 60 crystals in a transceiver while 124 crystals are required if the transmitter and receiver are separate. A South American airline using DC-6 aircraft is now flying a King 1½ system.

The 360-channel transceiver due out late in 1961 will have the projected 50-kc spacing.

Looking down the road, King predicts that the new TSO requirements will be reasonable and that the manufacturer can run tests on production models. If requirements are met, the equipment is TSO'd. In a year or so, DMET will be in use and airplane owners will debate whether to buy it or add a second omni. Pilots in high-density areas will need omni independent of communications for VFR operations. Radar is moving in fast and radar controllers will have to have direct line control of all aircraft in their system. With increased use of radar control, we can expect the need for each plane to have a transponder for clear-cut identity on the controller's radar scope.

There's little doubt but that King will continue to expand his line of products. To have produced and sold what he has in less than two years and with the new products to be marketed this year, it wouldn't be surprising to see King announce someday that he's in the flight control business with an autopilot and an integrated flight system. We saw no evidence of an ADF but you can rest assured that he's thought about it and if he can challenge the present sets on the market, he'll not hesitate to do so.

Like King, who is only 39 years of

Workers use large magnifying glasses for close-up assembly and inspection of components in King radio equipment. Note view through large glass below.

"OUR NEW BFG LIGHTWEIGHT DE-ICERS WORK VERY SATISFACTORILY WHEN ICE IS ENCOUNTERED. WE FEEL THERE IS GREAT VALUE IN HAVING THESE DE-ICERS—THEY CONTRIBUTE TO OUR PRACTICE OF A SAFE OPERATION. LIKE OTHER EQUIPMENT CONTRIBUTING TO SAFETY, YOU CAN'T SEND FOR IT AFTER YOU'RE AIRBORNE."

Ken Braun, Chief Pilot, Jim White Chevrolet Co., Toledo, Ohio, with Aero Commander 560-E, equipped with BFG pneumatic De-Icers. This ship is used in operating twelve automobile dealerships in Ohio, Indiana, and Michigan.

BFG LIGHTWEIGHT PNEUMATIC DE-ICERS. Weigh approximately 50 pounds. Operation is pneumatic, with a compressed air accumulator providing enough energy for up to 7 hours of positive de-icing between charges.

ELECTRICAL PROPELLER DE-ICER. Complete kit weight approximately 10 pounds; low power requirements. Current is cycled automatically for effective de-icing.

Contact your B.F.Goodrich Aviation Products Distributor, or write B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Akron, Ohio.

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AIRCRAFT PARTS CO.
AIRWORK CORPORATION

Birmingham, Alabama
AEROMARINE SUPPLY

Burbank, California
PACIFIC AIRMOTIVE CORPORATION

Cleveland, Ohio
GENERAL AIRCRAFT SUPPLY CORPORATION
AIRWORK CORPORATION

Dallas, Texas
GENERAL AVIATION SUPPLY CO.
SOUTHWEST AIRMOTIVE COMPANY

Denver, Colorado
SOUTHWEST AIRMOTIVE COMPANY

Detroit, Michigan
GENERAL AIRCRAFT SUPPLY CORPORATION

Hawthorne, California
SKY STORE

Hinsdale, Illinois
MIDCONTINENT AIRMOTIVE CORP.

Houston, Texas
GENERAL AVIATION SUPPLY CO.
SOUTHWEST AIRMOTIVE COMPANY

Jamaica, L. I., New York
AIRWORK CORPORATION

Kansas City, Kansas
SOUTHWEST AIRMOTIVE COMPANY

Louisville, Kentucky
LOUISVILLE FLYING SERVICE

Madison, Wisconsin
VAN'S AIR SERVICE, INC.

Memphis, Tennessee
DON HORN COMPANY

Miami, Florida
AIRWORK CORPORATION

Minneapolis, Minnesota
MINNESOTA AIRMOTIVE, INCORPORATED

Muncie, Indiana
MUNCIE AVIATION CORPORATION

Nashville, Tennessee
CAPITOL AIR SUPPLY

Newark, New Jersey
AIRWORK CORPORATION

Northbrook, Illinois
MID-STATES AVIATION CORP.

Oakland, California
PACIFIC AIRMOTIVE CORPORATION

Oklahoma City, Oklahoma
GENERAL AVIATION SUPPLY CO.

Philadelphia, Pennsylvania
GENERAL AIRCRAFT SUPPLY CORPORATION

Phoenix, Arizona
GENERAL AVIATION SUPPLY CO.

Rochester, Minnesota
GOPHER AVIATION, INC.

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GENERAL AVIATION SUPPLY COMPANY
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PACIFIC AIRMOTIVE CORPORATION

Tulsa, Oklahoma
SOUTHWEST AIRMOTIVE COMPANY

Vandalia, Ohio
GENERAL AVIATION SUPPLY COMPANY

Washington, D. C.
AIRWORK CORPORATION

Winston-Salem, North Carolina
PIEDMONT AVIATION, INC.

B.F.Goodrich

B.F.Goodrich aviation products

TOP BEECHCRAFT SALESMAN IN CUSTOMER RELATIONS AND SERVICE during 1960 was Al Chapman of Tulsair Distributors at Tulsa, shown receiving from Mrs. Olive Ann Beech the Tom Patton Trophy. The award was originated recently by customers of the late Tom Patton of Van Nuys. Chapman's wife is at left above.

MAN OF THE YEAR AWARD FOR OUTSTANDING CONTRIBUTIONS TO AVIATION was bestowed by Beech Aircraft on its famous distributor in Indianapolis, Col. Roscoe Turner. The pioneer airman and record breaker is shown receiving it from Mrs. O. A. Beech and Wyman L. Henry, Beech vice president-marketing.

SECOND GENERATION BEECHCRAFT SALESMEN made their marks during the recent annual Beech sales meeting. They are shown above with Frank Hedrick, Beech executive vice president (center). Left to right are Bill Thaden, Greensboro, N. C., son of Louise Thaden, noted aviatrix of the 1930's; William R. Cutter of Phoenix, son of Distributor Bill Cutter of Albuquerque; Hedrick; Sidney Cutter, another son of the Albuquerque distributor, and Terry Combs, whose father is Beech distributor at Denver.

age, all of his staff are young men under 40. Jim Harris is vice president in charge of manufacturing; C. J. Weltsch, vice president for finance; Wallace F. Wiley, chief engineer; William E. Kelley, general sales manager. The board of directors is composed of King, Harris and Weltsch plus Ted McGrade and Wayne Bonebright.

Electronics and production genius, salesman, speaker, pilot, inventor, family man and industry representative, Ed King wears many crowns. This coming April will mark his third year in designing and manufacturing aviation radio. There's no telling how far King and company will go during the next few years. But on the basis of recent rate of progress, it's going to be something everybody will watch.

Airmen's Calendar

Jan. 15-18—13th Annual Convention, Helicopter Association of America, Cherry Hill Inn, Haddonfield, N. J.

Jan. 16-Feb. 3—Aviation Institute for Business Pilots and Commercial Carriers, University of Southern California, Los Angeles.

Jan. 18—Zonta Club's Annual Amelia Earhart Dinner; Speaker: Miss Jacqueline Cochran, F.A.I. President; Adolphus Hotel, Dallas, 6:30 p. m.

Jan. 23-25—29th Annual IAS Meeting, Hotel Astor, New York.

Jan. 27-28—3rd Annual Safety Refresher Course for Pilots, Illinois State Normal University, Bloomington-Normal, Ill.

Feb. 7-8—6th Annual Business Aircraft Safety Seminar, sponsored by Flight Safety Foundation, Inc., Marriott Motel, Dallas.

March 11-18—10th Annual Idaho Air Tour to Mexico.

March 13-31—Aviation Institute for Business Pilots and Commercial Carriers, University of Southern California, Los Angeles.

March 16-18—5th National Conference on Aviation Education, Mayflower Hotel, Washington, D. C.

March 28-29—Nucleonics in Flight Symposium, American Nuclear Society, Statler Hilton Hotel, Dallas.

April 4-5—Aviation Technician School Administrators Conference, Purdue University, Lafayette, Ind.

April 22-25—34h Annual Business Meeting, American Association of Airport Executives, Broadmoor Hotel, Colorado Springs.

May 26-June 4—24th International Air Show, LeBourget Airfield, Paris, France.

June 13-15—37th Aviation Distributors and Manufacturers Association Meeting, Dennis Hotel, Atlantic City, New Jersey.

HERE'S THE SIGN OF THE FINEST SERVICE FOR YOUR PIPER AIRPLANE

Piper has established a world-wide network of Factory-Certified Service Centers to assure you of the finest service possible for your Piper airplane.
To earn the coveted designation, service organizations must meet rigid requirements, must be properly equipped and staffed by personnel who have attended the intensive service school conducted at the Piper plant.
Dozens of Piper Factory-Certified Service Centers have been established throughout the nation and around the world, and more are being designated to assure convenient and competent Piper service wherever you may wish to fly.

FOR THE BEST IN PIPER SERVICE AND MAINTENANCE VISIT THE PIPER FACTORY-CERTIFIED SERVICE CENTERS LISTED BELOW

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HOmestead 5-1728
Austin, Texas

CATLIN AVIATION CO.
Will Rogers Field
P. O. Box 2398
MUtual 5-6644
Oklahoma City, Oklahoma

CUMMINGS & GROVES AVIATION, INC.
Houston International Airport, Hangar No. 8
MIssion 4-5593 *and OLive* 4-4351
Houston, Texas

DELAWARE AVIATION CORPORATION
North Philadelphia Airport
HObart 4-1600, *TWX PH* 520
Philadelphia 36, Pennsylvania

EXECUTIVE AIRMOTIVE, INCORPORATED
Stewart Air Park
P. O. Box 70
GArfield 8-3581, *GArfield* 2-7277
Parkersburg, West Virginia

J & J AIRCRAFT, INC.
Sarasota-Bradenton Airport
821 *General Arnold Road*
ELgin 5-6868
Sarasota, Florida

KEN-MAR AIRPARK, INC.
Ken-Mar Airpark
Box 2667, *University Station*
MUrray 3-6589
Wichita, Kansas

RED AIRCRAFT SERVICE, INC.
Broward County International Airport, Building 78
JAckson 3-9624
Fort Lauderdale, Florida

ROSS AVIATION, INC.
Riverside Airport
HIckory 6-6654
Tulsa, Oklahoma

FIRST FLIGHT OF NEW TWIN-TURBINE SIKORSKY S-61L COPTERLINER was made last month at Stratford, Conn., and is pictured above. The 25-28-passenger helicopter airliner has DC-3 type and size cabin and offers five important improvements over large single-engine piston-powered helicopters now used by helicopter airlines — it carries twice as many passengers, is 30% faster with 136-mph. cruising speed, has multi-engine safety with two General Electric CT-58 shaft turbines, has a lower sound level, less vibration and modern airline seating comfort, and its lower operating costs offer the possibility of subsidy-free operations. Los Angeles Airways has ordered five S-61L's and Chicago Helicopter Airways is purchasing four.

—(Sikorsky Photo.)

AIR REPORT

(Continued from page 8)

July 31, 1960, according to Ward J. Mayrand, aviation information supervisor, Michigan Department of Aeronautics. This total is considerably more than the 2,715 general aviation aircraft in Michigan registered with the FAA in Washington as of Jan. 1, 1960. The Michigan Department of Aeronautics count includes 1,315 4-place or larger single-engine aircraft; 1,518 1-3-place single-engine aircraft; 289 multi-engine aircraft, 8 gliders or sailplanes, 6 helicopters and a 10-place single-engine Noorduyn Norseman. Thirteen Michigan counties registered more than 40 general aviation aircraft, each, in the Department's July 31, 1959, count (the 1960 county breakdown was not immediately available), ranked as follows: Wayne 588, Oakland 401, Macomb 171, Genesee 134, Ingham 123, Kent 115, Washtenaw 107, Kalamazoo 89, Jackson 85, Berrien 75, St. Claur 68, Lenawee 59 and Muskegon 57.

DON HOSKINS, 4980 Marine Drive, Chicago 40, says his high-intensity position light system has been STC'ed by FAA for air carrier and private aircraft categories. The system includes 3 lights — red and green for wingtips and white for the tail — and provides high-intensity stroboscopic flashes as a safeguard against mid-air collision.

FLIGHT SAFETY FOUNDATION'S 6TH ANNUAL BUSINESS AIRCRAFT SAFETY SEMINAR in Dallas, February 7-8, will feature numerous discussions of importance to aircraft owners and pilots. Items on the agenda will include: Safe transitioning to new aircraft; quality control problems in a business aircraft operation which is not large enough to support a full-scale quality control department; accident investigations as an accident prevention tool; management as applied to business aircraft operations; the role of the CAB in aviation safety related to business aircraft and business aircraft maintenance. The Dallas seminar will be held at the new Marriott Motel and a large attendance is expected. Its program was formalized in New York at a meeting last month of the Flight Safety Foundation's Business Aircraft Advisory Board attended by Jerome Lederer, managing director; Allen C. Miner, air operations director; and the following members: Randall H. Carpenter of Wayfarer Ketch Corp.; Joseph M. Chase of FSF; J. W. Clemow of Eastman Kodak; Charles H. Daudt of Continental Development; D. F. Farabaugh of the Kawneer Co.; Kurt Heilbronn of the Evening Bulletin; W. E. Hinton of Chrysler; Grover Loening of FSF; R. Bruce Middleton of Imperial Oil; Charles E. Morris of Socony Mobil; E. Tilson Peabody of General Motors; Nelson U. Rokes of Procter & Gamble; C. F. Schmidt and Ansell E. Talbert of FSF; D. M. Teel of U. S. Steel and Robert Vinson, International Minerals.

MULTI-ENGINE HELICOPTER AIRLINE SERVICE FOR MANHATTAN ISLAND will become a reality with operations of New York Airways' new 25-passenger, 150-mph. twin-turbine Boeing-Vertol 107 transports. The V-107 prototype is pictured with Manhattan in the background at last month's dedication of New York's Downtown Heliport near the foot of Wall Street on Pier Six in East River, upstream of the ferry terminals shown. The V-107 will place the new terminal within 7 minutes of N. Y. International Airport. It is powered by two General Electric CT-58 shaft turbines.

—(Boeing-Vertol Photo.)

FIRST SALES MEETING OF SAILPLANE DEALERS ever conducted in the U. S. was held last month at Schweizer Aircraft, Elmira, N. Y. and 1961 models were shown, including the Schweizer 2-22C club and trainer sailplane, the 1-26 and the high-performance 1-23H. Dealers from California, New Mexico, Texas, Kansas and Illinois, as well as from eastern states, attended and flew the new models. All of them operate a commercial soaring school or will have one in operation by summer. They reported increased soaring activity and interest among power-plane pilots.

CENTRAL AIRLINES has acquired three Convairs from American Airlines and will operate them on Central's newly-authorized route between Tulsa and St. Louis.

T. ROLAND BERNER, a member of the board of directors for over 11 years, has been elected president of Curtiss-Wright Corp.

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- Logan International Airport
  East Boston, Massachusetts
- International Airport
  Philadelphia, Pennsylvania
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Houston, Texas — MI 4-5595

BUTLER CO., AVIATION DIVISION
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CURREY SANDERS AIRCRAFT CO., INC.
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CUTTER-CARR FLYING SERVICE, INC.
West Mesa Airport, Albuquerque, New Mexico

GRAY AIRCRAFT SVC. CO., INC.
D. A. Cody, Service Manager
Love Field, Dallas, Texas

GREENSBORO-HIGH POINT AIR SERVICE, INC.
Greensboro-High Point Airport
Greensboro, North Carolina

ELLIOTT FLYING SERVICE
- Municipal Airport, Des Moines, Iowa
- Municipal Airport, Davenport, Iowa

THE NORMAN LARSON CO. PLANESERVICE, INC. (Service Division)
Van Nuys Airport, Van Nuys, Calif.
(Los Angeles Area)

PIEDMONT AVIATION, INC.
Smith Reynolds Airport
Winston-Salem, North Carolina

ROSCOE TURNER AERONAUTICAL CORP.
Municipal Airport, Indianapolis, Ind.

TEXAS AVIATION CORPORATION
G. K. Roberts, Pounds Field
Tyler, Texas

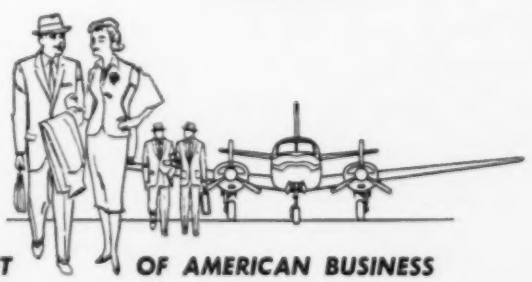
TOPEKA AIRCRAFT SALES & SERVICE
Municipal Airport, Topeka, Kansas

TRADEWIND AIRPORT CORP.
Tradewind Airport, Amarillo, Texas

TULSAIR DISTRIBUTORS, INC.
Hangar 8, Municipal Airport, Tulsa, Oklahoma

UNITED AIRPLANE SALES, INC.
New Municipal Airport
Wichita, Kansas

Beechcraft



BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

New Business In The Hangar

Dalaero Lodestar Approved for 21,500 Lbs.

Dallas Aero Service announced late in December that its Dalaero conversion of the Lodestar has been approved for 21,500-lb. take-off weight with choice of engine combinations, giving it 2,000 lbs. more payload for people or cargo or extra fuel for nearly 1,000 miles of additional range.

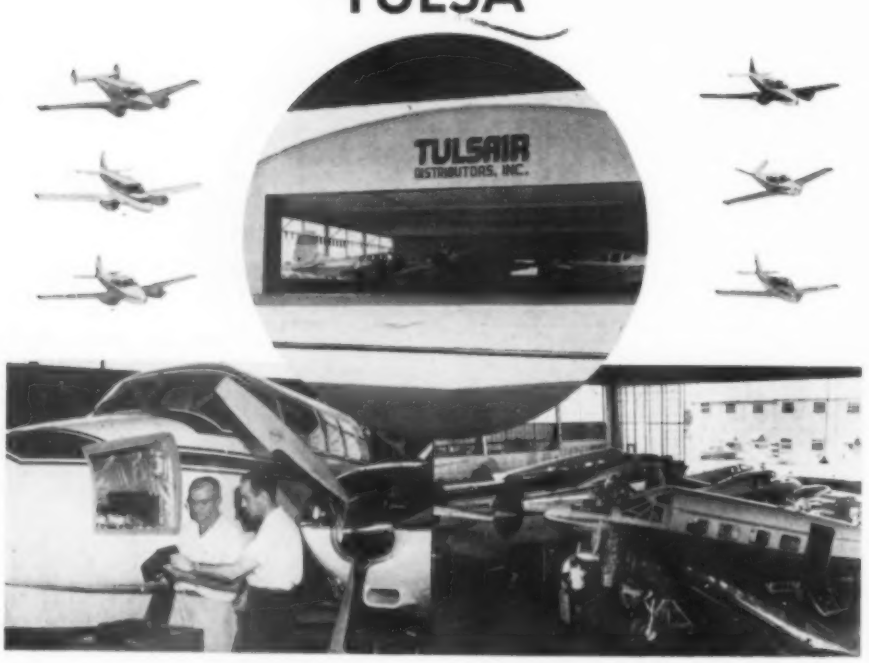
Newest Dalaero developments include electronically-operated elevator and trim-tab control; standby-thrust rocket installation; new 3-way adjustable pilot seats; cockpit picture window for greater visibility and enlargement of cabin picture windows to 14 by 48 ins. and standard windows to 14 by 14 ins.; new window valance which completely hides the curtain rod and top of the curtain; individual paging system independent of the radio system; new pin-type electrical system terminal connector which does not require a terminal box and saves weight and space; hydraulic pressure increase to 1,025 lbs. and increased volume of fluid under pressure by addition of a main system accumulator; and new passenger seats with the entire seat tipping back instead of just the back. Basic Dalaero modifications for Lodestars include radome and airspeed system, streamlined pressure cowling, tail cone, improved saddle back, modified wing trailing edge, 230-gal. aux wing tanks and landing gear modifications. . . . Meanwhile, more de Havilland Doves were in the Dallas Aero hangar for compliance with Technical News Sheet 168 concerning wing attach fittings. In for this and other work were Jay Cobb's Hunt Oil Dove; Frank Ernst's Franklin Supply Dove; Aerojet-General's Dove, which also received a new interior and control surface recover; Interstate Motor Lines' Dove; Helmerick & Payne's Dove; Shell Oil's Los Angeles Dove, which also received 5,000-hr. inspection and double engine change; Shell's New York Dove; and Shell's Venezuela Dove, which also received a new interior and other work.

ASSOCIATED RADIO, Love Field, Dallas, and Sperry Phoenix Company have announced FAA approval of the first push-button autopilot for jet transports, with formal certification of the Sperry SP-40 installation by Associated Radio aboard Superior Oil's Grumman Gulfstream. Orders for the SP-40 total $1,000,000 and it is now being delivered in volume for Lockheed's new JetStar. George F. Jude, Sperry Phoenix engineering manager, said the new system incorporates unique electronic techniques to provide medium-category jetliners and executive transports with flight automation comparable to that of the SP-30 system for the DC-8, Convair 880 and Convair 990. The SP-40 system weighs only 80 lbs., in contrast to the 120-150 lbs. required for previous systems to perform comparable functions. The FAA certification program included automatic instrument landing approaches to three airports in the Dallas area and the SP-40 consistently flew the Gulfstream hands-off to altitudes well below the minimums. Observers aboard the Gulfstream, as it was readied for the FAA check flights, noted that the SP-40 automatically held altitude so accurately that no deviation could be detected with the aircraft's altimeter. Modern autopilots normally are expected to hold altitude within about 20 ft., which is easily detected by a standard altimeter.

PACIFIC AIRMOTIVE, Burbank, has a two-year contract to overhaul Rolls-Royce Tyne turboprop engines and accessories for Slick Airways' new Canadair CL-44 airfreighters, first of which will be delivered in September, 1961. Roy Backman, vice

Tulsair . . .

Your BEECHCRAFT HEADQUARTERS in TULSA



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president, said PAC is the only firm in the U. S. equipped and approved by Rolls-Royce to overhaul the big Tyne engine. PAC is currently overhauling R-R Dart engines powering Fairchild F-27, Grumman Gulfstream and Vickers Viscount aircraft.

AIRCRAFT RADIO CORP. has named G. V. (Mike) Smith as field sales manager, according to General Sales Manager Carl L. Cahill. Smith joined ARC following service as a U. S. Army aviator and is a commercial pilot with helicopter and multiengine ratings.

EAST COAST AVIATION CORP., Bedford Airport, Lexington, Mass., installed a McMillan radome and antenna structure in Sanders Associates' Douglas R4D. . . . Original certification was performed for Red Banks on the Lester G. Welch Sikorsky S-51. . . . Also in the hangar for work were Sid Coleman's Apache, Dick Fournier's Pioneer Plastics Aero Commander, Carl Fisher's Brown Company Aero Commander, Stu Jones' Miniature Precision Bearing Beech Super 18, George Parmenter's Cape & Islands Flight Service Beech C18 and an FAA DC-3 flown by Clyde Hudnall and Dick Carlson.

EXTENSION IN TIME BETWEEN OVERHAUL from 800 to 1,000 hrs. has been granted Delta Air Lines for its General Electric CJ-805-3 turbojet engines. The extension is for conventional overhaul, not sectionalized overhaul.

AIRESEARCH AVIATION SERVICE, Los Angeles International Airport, delivered Mead Johnson & Company's Convair 340 to Chief Pilot E. L. Beard and Henry Weldon after installation of a most unusual custom executive interior, super sound treatment with acoustic windows, auxiliary power unit modification, stainless steel nacelle overlay and other work, cockpit refurnishing, engine change and exterior painting. . . . General Electric's Caravelle has an AiResearch crew working on it at Edwards Air Force Base, soundproofing and retrimming the aft end of the interior after installation of new GE engines, and installing a lavatory, closet and baggage area. . . . Ford Motor sent in one of their DC-3's with Art Lassell and Dick Yerek for refurnishing of the interior, short-stack modification, rudder recover and partial exterior paint. . . . Republic Aviation's Alouette helicopter was in the hangar for refurbishing of the interior, design and fabrication of snap-in panels for rear overhead windows, and exterior painting. . . . Radar nose modification kits fabricated by AiResearch for Convair 240's are designed for installation with RCA, Bendix or Collins lightweight weather radar systems. . . . General Dynamic's Convair 240 is undergoing exterior painting and

NEW BENDIX CNA-30A AUDIO CONTROL PANEL for lightplanes combines transistorized isolation amplifier with switches and controls for 2 transmitters, 6 receivers, interphone, marker sensitivity and range filter, with up to 8 watts of audio power for speakers. It weighs less than 2 lbs.

COMPARE

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Associated Radio Service Company specializes only in electronic installations of all types for private, executive and airline aircraft.

Because aircraft electronics is our only business, we are proud of our facilities, which we believe are the finest. All this is dedicated to serving you, the business aircraft operators.

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fuel tank sealing. . . . Work is under way on a contract for fabrication of six movable bulkheads and six lavatory kits for Eastern Air Lines.

COLLINS RADIO'S FACTORY SERVICE DIVISION at Cedar Rapids, Iowa, has been granted an air agency certificate for the repair and retrofit of Collins airborne radios and instruments. All of the Factory Service Division's supervisory personnel hold FCC licenses in addition to FAA airman certificates with repairman-radio and instrument ratings. The Division can now issue airworthiness certificates on Collins equipment maintained for airline and other major users of aviation equipment.

FAIRCHILD F-27 WINGS have been given FAA approval as "fail safe" in a revision to the propjet's type certification data sheet meaning, in effect, that the F-27 wings will last for the life of the aircraft without need for replacement. FAA also increased the retirement times of the F-27 fuselage to 40,000 hrs., an increase of 30,000 hrs. over the previous retirement time. Sherman M. Fairchild said the FAA action resulted from one of the most extensive fatigue evaluation programs any transport aircraft has ever undergone. It was carried out by both Fairchild and Fokker Aircraft of Holland. "Tests and investigation are being continued in an effort to eliminate retirement times on all remaining F-27 items," Fairchild said.

REMMERT-WERNER, Lambert Field, St. Louis, has delivered a newly-converted executive Convair to Falstaff Brewing of St. Louis, B. N. Haddock and M. Willett, pilots. Equipment includes Bendix RDR radar, Collins radar transponder, Sperry A12 autopilot, dual Collins 51R omni with RMI's, dual ARC ADF-21's, Collins 17L7-51X VHF and ARC-210 VHF transceivers, Collins 18S4 MHF transceiver, isolation amplifier and custom radio and instrument panels. The custom passenger cabin has sixteen seat belts and a rear entrance door.

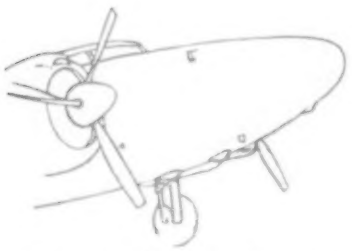
A NEW CHEMICAL ADDITIVE WHICH PREVENTS IN-FLIGHT ICE FORMATION IN JET FUEL SYSTEMS has been developed by Phillips Petroleum and approved by the Strategic Air Command following exhaustive tests by the Air Force and Boeing. Called "PFA 55MB," it is immediately available, is compatible with materials it contacts in fuel systems and does not adversely affect the thermal stability of jet fuel. Phillips says a very small amount of the anti-icing compound added to jet fuel provides more complete protection than fuel heaters and also prevents ice in fuel tanks and other system parts not served by heaters.

PIEDMONT AVIATION, Winston-Salem, had W. H. Dameron's Sears Roebuck DC-3 for de-icer boot change and periodic inspection. . . . Ken Colthorpe's Champion Spark Plug Fairchild F-27 was in for compliance items. . . . Others in the hangar included Don Price's Pilot Freight Carriers' Beech D18S, Don Bond's Celanese Lockheed, Charlie Helms' Campbell Soup DC-3, Herb Drew's R. J. Reynolds DC-3, and Smith Transfer's Beech E18S.

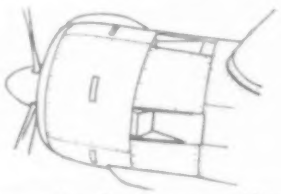
AIRWORK CORPORATION, Millville, N. J., has re-aligned executive assignments as part of its expansion. John S. Gillespie was elected executive vice president, Josiah V. Thompson remains as chairman and Jerome Church, former Southern Division manager, was made vice president of sales.

EXECUTIVE AIRCRAFT SERVICE, Redbird Airport, Dallas, performed installation changes of the auxiliary power unit and other work in Charles Bolton's Tecon Convair. . . . Ken Jolly's Texas Gas Transmission A-26 was in for repairs.

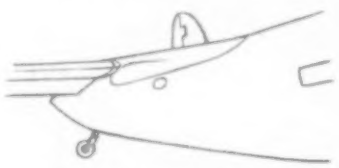
ORDERS FOR $9.3 MILLION WORTH OF BENDIX TRANSISTORIZED AUTOPILOTS have been received by Eclipse-Pioneer. One order for $6.4 million was from Douglas Aircraft for flight controls for the



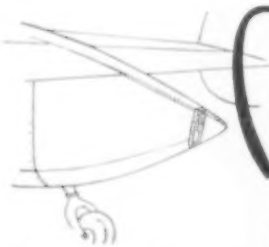
Radome and air speed system



Streamlined pressure cowling, improves performance.



Improved saddle back design
(picture windows optional)



Tail cone modification

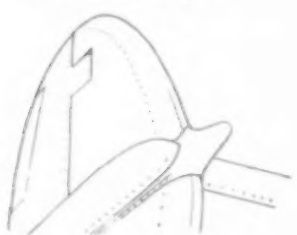
Dalaero

by

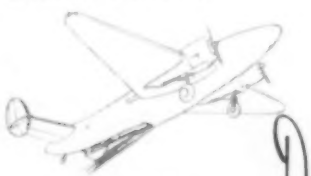
DAS

Trailing edge modified 230 gal. auxiliary fuel tank each wing

Rear landing gear doors close tight with landing gear up or down. Spot brakes, Decelostat.



Note stabilizer short tips and fin stabilizer probe fairings



Standby rocket take-off assist

Dalaero as designed by Dallas Aero Service incorporates all the basic advantages of Lodestar design plus the latest performance, speed and safety developments . . . making it the finest executive aircraft in its class.

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Navy's A4D jets and a Boeing Aircraft order for $2.9 million was for systems for Boeing 707 and 720 aircraft. The orders were for the long-proved Bendix autopilot which has clocked over half a billion miles and 1.5 million hours in airline service, being used by 35 airlines and 5 military services. Bendix has a future design now logging flight time — it is a "completely solid-state pilot" using latest developments in electronic circuitry to eliminate moving parts.

HOWARD AERO SERVICE, International Airport, San Antonio, has delivered the Weatherhead Company's Lodestar to Gordon Bennett with modifications including power packs, interior work and exterior paint. . . . Dick Prendergast's Chicago Tribune Mark II Super Ventura is nearing completion. . . . Earl (Red) Harding's Pontiac Refining Convair 240 was in for water regulator conversion and repairs. Bob Seitz brought in Barber-Coleman's Learstar for interior and other work. . . . Engine nacelle AD note compliance and tank seal were performed on Reg Robbins' Brown & Root Convair 240. . . . Harvey Glass brought in Natural Gas Pipe Line's DC-3 for Sierracin windshield installation and repairs. . . . Others in the hangar included Don Swift's Cleveland-Cliffs Iron Howard 250, Don Daul's Great Lakes Steel Howard 250, Harold Smith's Continental Homes' Twin Beech, Carrol Rippy's Utex Exploration Super Ventura, Hub Gayle's Copano Oil Convair 240, L. P. Benus' Ebco Manufacturing Super Ventura, and Leighton Dorsett's Atkinson Realty Lodestar.

CONTINENTAL AIR LINES has received FAA authorization to operate its P & W JT3C6 jet engines 1,600 hrs. between major overhauls, an extension of 200 hrs. for the second time within the last 90 days.

NEW LIGHTWEIGHT ANTI-SKID SYSTEM FOR AIRCRAFT BRAKES developed by B. F. Goodrich Aviation Products is said to provide complete, fail-safe protection against incipient skids and locked-wheel conditions by automatically maintaining sensitive control throughout the whole speed range from touchdown to very low speeds of 3 or 4 mph. It is described as a comparatively simple electronic hook-up between a tachometer and a transistorized control box providing a fully-modulated braking pressure proportioned to signal strength from wheel deceleration as opposed to other anti-skid systems which employ an abrupt on-off action. Easy to install, the complete basic system to control four wheels weighs only 4 to 6.5 lbs., depending on the type of control valve used.

READING AVIATION SERVICE, Municipal Airport, Reading, Pa., made radio installations in Skip Whitner's Kewanee Oil Martin 404 and DC-3. The Trenton-based Martin received a Collins 621A radar transponder, two ARC-210 transceivers, Collins 137X and two 37R-2 antennas, a Bendix MKA-7A marker and all new cable controls. The DC-3, based in Tulsa and flown by Frank Auernig, received an ARC-210 and a Collins 17L/51R. . . . Pinkey Grimes brought in Thompson Industries' new 680F Aero Commander for installation of dual Collins 51X-2/344A-1 omni, dual Collins 51X-2/17L-7 communications, Collins 621A transponder, ARC CD-1 course director, Collins 51V-3 glideslope, Sperry C-4B gyrosyn compass, ARC-21A, MBT-24 marker, Flite Tronics CA-2A audio system, RCA AVQ-50 weather radar with 5-in. indicator, McMillan radome and new instrument and radio panels. . . . Musser Purchasing's new 680F Aero Commander was in for complete nav-com installation — dual ARC-15F omni, CD-4 course director, ADF-21A, ARC glideslope and marker receivers, ARC-210 transceiver, Collins 618F transceiver, ARC-F11A isolation amplifier, RCA AVQ-50 radar with McMillan radome, L-2 autopilot with attitude control and approach coupler, full anti-icing equipment and triple windows. . . .

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Builders of TOMORROW'S Aircraft Equipment TODAY!
offers
unique job opportunities for

CREATIVE ENGINEERS

experienced in radio transmitter and receiver design, distance measuring equipment, ILS, transponders, autopilots and related instrumentation.

The right man will be attracted to these most desirable conditions:

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3. New plant facilities in one of the nation's most attractive metropolitan-suburban areas, just 20 minutes from Kansas City.
4. The personal satisfaction of working creatively on the development of advanced aircraft communications and navigational equipment.

Write in complete confidence to Wallace F. Wiley, Chief Engineer

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Steve Jones' Morysville Auto Body 680 Commander received an L-2 autopilot, ARC CD-2 course director, ANC-3 omni coupler, and Flite Tronics CA-2A audio system. . . . A 100,000-BTU heater and de-icer and anti-icer equipment were installed in Jesse Norris' Princess Coal B-26. . . . A Collins 618F transceiver was installed in J. Robinson's South East Airlines DC-3. . . . Bill Pennypacker's Boyertown Auto Body's de Havilland Dove was in for engine change and wing and spar modification. . . . Western Pennsylvania Chemical's Cessna 310 was in for double engine overhaul, paint job and ARC omni installation.

NEW $950 ARC STARFLITE III ADF-501A FOR LIGHTPLANES operates from the primary aircraft power supply without separate power unit or rotating machinery. Weighing 14.2 lbs., the new ADF's components (above) are an electrically-compensated L-501A loop antenna with fairing, F-501A amplifier with transistorized reference oscillator, 501A receiver with tuning meter and using both transistors and vacuum tubes, and IN-501A indicator with 360-deg. luminous dial.

TECO, INC, aircraft seating manufacturer of Burbank, has appointed E. H. Nett a sales administrator to push sales of the firm's new lightweight, plastic-shell "Mason seat" for the executive aircraft market and in the expanding high-density seating programs of the airlines. Nett came to Teco from Hughes Aircraft's field service and support division and has been a pilot for 20 years.

AIRWORK CORP., Millville, N. J., has been named eastern distributor

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2000 W CAP. 110 V.

AIRPLANE ENGINE WARMER

This Electric HOT-BLAST Airplane engine pre-warmer is manufactured in models to fit all Beech Bonanzas, Cessna 140, 170, 175, 180 and 310 Twin and Piper Pacer and Tri-Pacer.

The heater mounts on the front of the Aircraft cowl in thirty seconds and recirculates the air in a continuous cycle under the cowl to the heater and back over and over again therefore immediately starting a heat-gain.

Heater nose is foam rubber padded to protect the plane's finish, has automatic adjustable thermostat, fuses, two 1000-watt heating elements creating 6,824 B.T.U.'s of heat per hour.

Unit is completely portable, operates on 110 volts and weighs less than 16 lbs.

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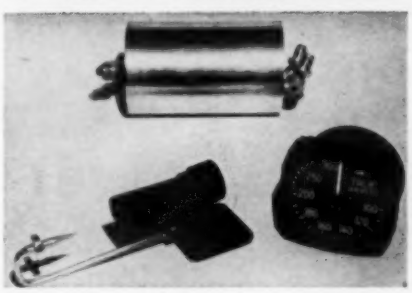
CAMERA PORT AND MAGNETOMETER INSTALLATION by Reading Aviation Service, Reading, Pa., in a new 680F Aero Commander is pictured above and at left. For Aero Service Corp. of Philadelphia, the camera port (above) is the largest ever cut into a Commander floor, having a 30-in. square skin opening and a floor opening of 25 by 28 ins. Photos taken from altitudes of 25,000 to 30,000 ft. cover 120 degrees and a single picture covers an area equal to that between Washington, D. C. and Long Island Sound. The magnetometer (left) was installed as a "tail stinger." Also installed was a General Precision Laboratories Doppler radar system for precise navigation without ground stations so that camera and magnetometer mapping is precisely related by Doppler to exact ground locations in aerial exploration for minerals.

for the Marman division of Aeroquip, manufacturer of clamps, straps, couplings and ducts for aircraft and missile applications. A recent sales meeting at which Marman product advantages were demonstrated by Patrick Lynch, Marman sales manager, was attended by W. J. Teasdale of Aeroquip, Thomas Rutledge and Edward Winfield of Marman and the following Airwork representatives — Bob Rocks, Fred Becker, Dewey Campbell and Ed Hammond of the New York area; Bernie Gale, John Power and Ron Whaley of Newark, Jack Hyland of Boston and Dan Tilden of Washington.

MOTOROLA AVIATION ELECTRONICS has announced the appointment of Henry C. Gammell as manager of distributor sales and service. Appointed by Paul O. Momenteller, marketing manager of the Motorola subsidiary, Gammell will act as liaison between Motorola Aviation marketing headquarters at Culver City, Calif., and distributor-dealer sales and service outlets throughout the U. S. and Canada. He has been associated with Motorola since 1946 in several executive positions and has flown and owned private aircraft for the last 30 years.

CONTINENTAL OIL COMPANY has completed arrangements for a

HUNTER TRUE AIRSPEED



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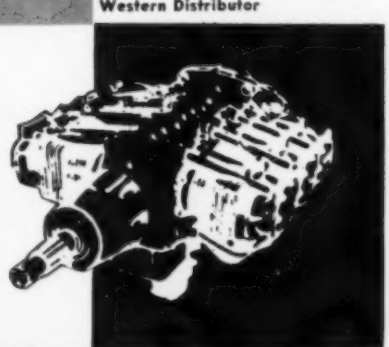

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- New drag-reducing landing gear doors
- New high-performance wing tips with built-in antennae
- New engine power pack and exhaust systems
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license from Castrol, Ltd., of London, England, to manufacture and distribute in the U. S. Castrol 98 and Castrol 3-C, two of the world's leading synthetic lubricants for jet engines. E. W. Cave, director of aviation sales for Continental, said the lubricants will be marketed through Conoco's aviation sales division and Conoco has also appointed Lehigh Chemical Co., Chestertown, Maryland, as a sales agent for them.

BENDIX RADIO has promoted Chuck McAtee to manager of business aircraft sales. He will head a drive for expansion of Bendix Radio activity in the business aircraft market.

LOCKHEED AIRCRAFT SERVICE, Ontario, California, has received an order from TWA to remanufacture six additional Model 1649A Super Constellations for all-cargo service, bringing to 12 the number of TWA luxury airliners converted for all-cargo purposes.

READING AVIATION SERVICE, Municipal Airport, Reading, Pa., has appointed J. Alfred Gill as coordinator of aircraft sales in the Western Pennsylvania-Eastern Ohio area. He has been associated with Aviation Sales Inc., Aero Commander distributor in the area.

BENDIX DOPPLER SYSTEM TESTS in a fighter aircraft at 30,000 ft. have proved that the Bendix DRA-12 can accommodate pitch angles up to 45 degrees over land, when the pitch and climb angles are within 5 degrees of one another and will track signals at pitch angles of 25 degrees at altitudes of 30,000 ft. over water. Roll angle performance has been extended to 60 degrees over land and to 30 degrees over water with a Beaufort One Sea State.

Revolutionary Mason Seat

Described as the most significant "breakthrough" in aircraft seating in 25 years, a revolutionary new plastic-molded contour chair for airliners weighs only 15 lbs. and is made with only 70 parts compared with nearly 500 parts in the type of airline chair long used as standard. The pretty young lady at right is shown holding the lightweight seat with ease and seat grouping is pictured below. Teco, Inc., Burbank seating makers, said the new seat, designed by E. Gilbert Mason, provides aircoach density seating with space and comfort equal to first-class seating, 200 of the new Mason seats fitting the DC-8 or 707 space currently seating 106 to 112 passengers. The entire Mason chair reclines, leg and headrest as an entity and seat maintenance is reduced by 90%. Simple forged legs quick-lock to a 3-in. steel tube universally fitting all track tie-downs, including wall mounts. Easily removed back and bottom cushions are of plastic foam, fabric or leather covered. Teco has supplied over 50,000 seats to airlines in 11 years.

MINNESOTA OMNI SYSTEM

(Continued from page 27)

system will be more valuable, of course.

We do not have 24-hour voice. The local operator or airline station agent handles the voice feature. Hours of operation are listed in the Airman's Guide. The navigational signal is on 24 hours.

We also do not have flight service stations with weather sequences or flight plan service. Local weather information is available. Weather at other airline points comes in on airline teletype at eight of the stations. In this regard, Nebraska has a more extensive setup than Minnesota.

We know our facilities are being used. The voice log at St. Cloud, Minnesota, for instance, runs about 300 contacts a month.

Our whole philosophy is that long before an area or airport meets FAA criteria for a federal facility, there is a genuine need for radio navigational facilities to increase the reliability and safety of flying.

This is the entrance to new offices and hangars of Executive Aircraft Service at Redbird Airport in Dallas, which specializes in servicing large corporate aircraft.

Enlarged Base for Executive Aircraft Service

NEW and enlarged facilities have been completed at Redbird Airport in Dallas by Executive Aircraft Service, one of the largest and most complete service centers in the United States specializing in corporate aircraft overhaul, modifications, maintenance, custom interiors and custom electronic systems. In the last 15 years, EAS has converted over 100 corporate DC-3's and Lodestars. Facilities were enlarged to accommodate more modern corporate Convairs and Grumman Gulfstreams. L. V. Emery, president, organized EAS 15 years ago. With him was Ken Schumacher, now vice president and general manager, and a team of aircraft specialists still with the company.

L. V. Emery, at left in photo below, heads the Executive Aircraft Service managing team, which includes Virgil Morgan (standing), Floy Green and Ken Schumacher.

PHX

Phoenix Sky Harbor Airport is the second busiest airfield in the United States. Located three miles east of downtown Phoenix, it is served by daily flights of American, Trans World and Western Airlines. Sky Harbor has an ultra-modern terminal building equipped to meet every personal need. Built on 1200 acres, space has been provided for 415 private and business owned aircraft.

Wherever there is air activity, the preponderant choice of protection for every aviation need is "U. S. Group" insurance.

Be sure you have this dependable protection. Coverage is quickly arranged through your own agent or broker.

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ADDISON AIRPORT

MOONEY MARK 21

(Continued from page 26)

A dorsal fin distinguishes the Mark 21 from previous models. It provides additional stability.

Flight tests have shown that the new all-metal flaps and control surfaces give the Mark 21 more responsiveness, as could be expected. Push-pull tubes are used throughout instead of control cables.

They also show the speed to be unchanged from that of the Mark 20-A. Here are some examples: With an outside air temperature of plus 3 degrees C., (1) indicated air speed was 155 mph. for 175 true air speed at 7,500 ft. using 22 inches of manifold pressure and 2,450 rpm.; (2) IAS was 152 for 172 TAS at 7,500 ft. using 22 and 2,300; (3) IAS was 164 for 178 TAS at 5,500 ft. using 24 and 2,450; and (4) IAS was 155 for 170 TAS at 5,500 ft. using 23 and 2,300.

The Mark 21's 4-cylinder Lycoming O-360-A1D engine is rated at 180 hp. at 2,700 rpm. It incorporates several improvements, including nitrided cylinders with tapered bore and 3 new half-wedge and narrower compression rings. Standard accessories include an improved carburetor air box, 180-degree oil temperature thermostat, 50-amp generator, dry vacuum pump and Bendix high-tension magnetos with retard spark for easier cold-weather starting. These magnetos include a separate retarded breaker and vibrator which generates a continuous spark for starting at lower temperatures. Use of the vibrator provides a shower of sparks independent of engine rotational speed in starting.

New nosewheel doors are all-metal (they were of fiberglass in the previous model) and completely seal the opening.

Actuation of the manual retracting landing gear has been made easier by refinements to the retracting mechanism obtained through the use of more precise production tooling and the incorporation in the gear mechanism

NEW MILLION-DOLLAR EXECUTIVE AIRCRAFT CENTER has been opened by Field Aviation Co., Ltd. in Canada at Toronto International Airport. It duplicates a similar Field Aviation executive center at Calgary. Field Aviation operates 24 hrs. daily completely servicing all types of aircraft. In group below at grand opening were (left to right) John R. Baldwin, Canada's deputy minister of transport; Mrs. Olive Ann Beech, the manufacturer; Douglas Kendall, Field Aviation president, and Victor Koby, Field Aviation general manager.

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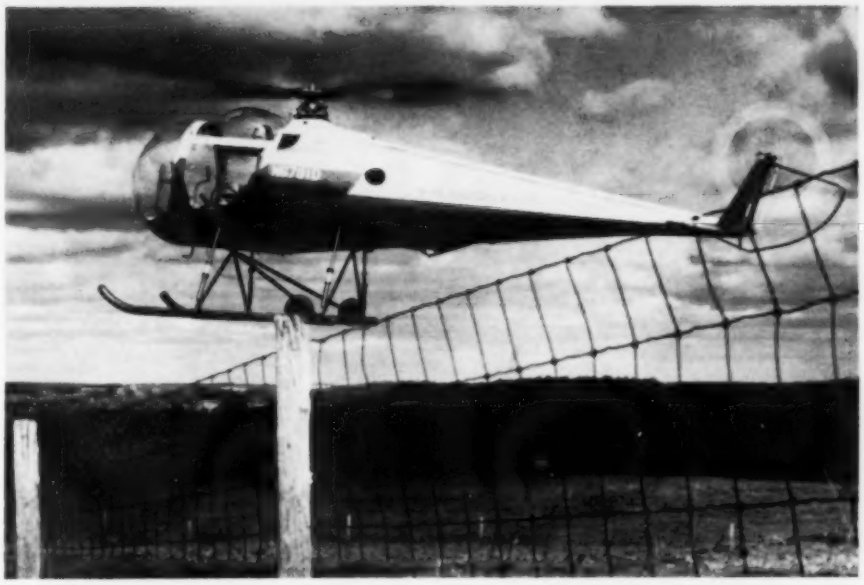
of machined parts and grease fittings. The landing gear control tube assembly was previously a 1-piece tubing assembly. It is now divided into two lengths of larger-diameter tubing, supported at the center by an "idler" arm and using bearings. Positive down lock was achieved with a spring cartridge to facilitate rigging.

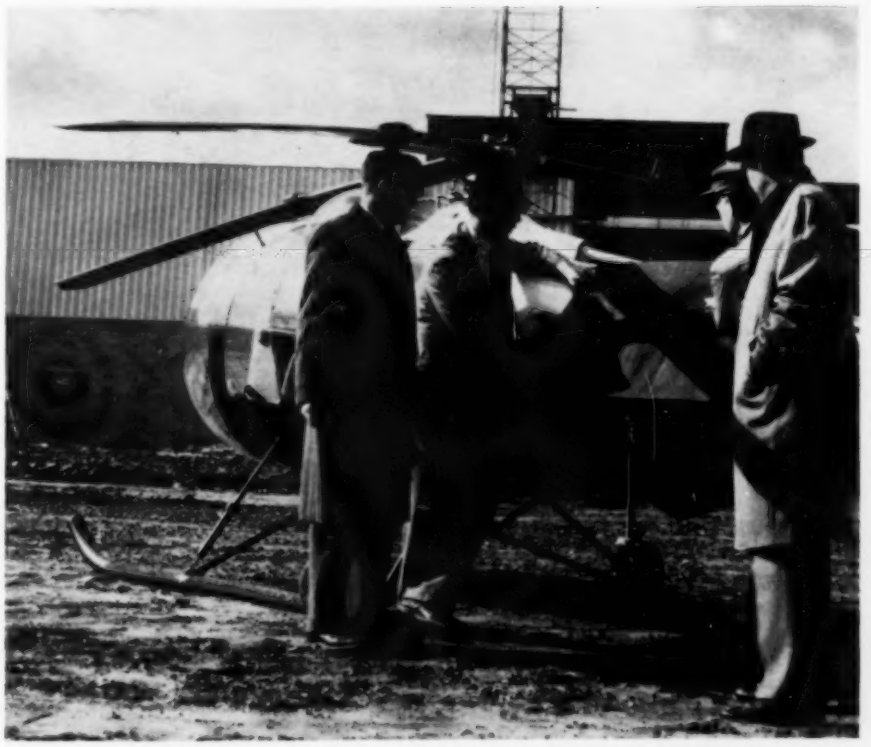
New in the cabin is additional knee room for rear-seat passengers. The main spar was bowed rearward and this moved the front edge of the rear seat back a distance of 4.5 inches. A beautiful new interior was designed by Fred Gore. Seats are covered with soft polyfoam over non-sag springs. Front seats have tapered backs which recline.

A new instrument panel is spacious and groups flight instruments on the left, with radios at center and engine instruments at right. Radio packages offered include combinations of Narco, King and Motorola, plus additional custom offerings.

Employment at the Mooney factory is currently 330 workers and they will increase to a total of 500 during 1961, with production reaching a rate of 2 airplanes daily in June. The factory's modern tooling will have a capacity of 500 aircraft annually at that time.

In commenting on the factory's completion of the all-metal conversion in only 7 months, Rachal paid tribute to cooperation of the Federal Aviation Agency. It was topped off in December, he said, when the FAA test pilot, James Patton, came to the factory on a Sunday to complete his flight tests even though it was a holiday. The new FAA airworthiness certificate for the Mark 21 was delivered during the sales meeting. "We could never have accomplished so much without the fullest possible cooperation from the FAA all along the way," Rachal said in praising that agency.





NEWEST WINGS ON THE BUSINESS SCENE ARE ROTARY, being those of the 2-place Brantly B-2 helicopter. Al Alson, Brantly sales manager, says the B-2 is used in farming (above) and construction (below), speeding from job to job without using airports.

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